

# EVALUATION OF THE MARKET FOR VS NOMAD

INPUT



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INPUT provides planning information, analysis, and recommendations to companies in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

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SOFTWARE PRODUCT MARKET  
FOR NOMAD

Prepared For:

NATIONAL CSS

OCTOBER 1978

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## EVALUATION OF THE MARKET FOR VS NOMAD

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## I INTRODUCTION



## I INTRODUCTION

- The objective of this study was to determine the viability and method of offering NOMAD as a software package to large users to run on in-house systems. Emphasis was placed on:
  - How users evaluate and select DBMS products.
  - User's perception of DBMS system requirements.
  - Marketing requirements for selling software products.
  - Training and support requirements for in-house DBMS products.
  - User perception of RCS salesmen and their ability to sell software products.
- The interview sample consisted of 60 user interviews within nine industry sectors, as shown in Exhibit I-1. Separate interviews were conducted for current in-house DBMS users, potential in-house DBMS users, NOMAD users and other RCS DBMS users.
- Research for this report was based on telephone interviews conducted in September of 1978. The names of the companies interviewed and titles of the respondents are listed in Appendix A.
- The questionnaires used to conduct this research are presented in Appendix B.



EXHIBIT I-1

INTERVIEWS CONDUCTED BY TYPE AND INDUSTRY SECTOR

INDUSTRY	IN-HOUSE DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS	NOMAD USERS	OTHER RCS DBMS USERS	TOTAL
INSURANCE	1	2	2	2	7
BANKING	1	2	3	--	6
UTILITIES	6	1	2	1	10
PROCESS MANUFACTURING	4	1	4	1	10
DISCRETE MANUFACTURING	7	4	2	3	16
TRANSPORTATION	1	--	2	--	3
RETAIL	--	--	2	1	3
GOVERNMENT	--	--	1	1	2
OTHER	--	--	2	1	3
TOTAL	20	10	20	10	60

## II EXECUTIVE SUMMARY





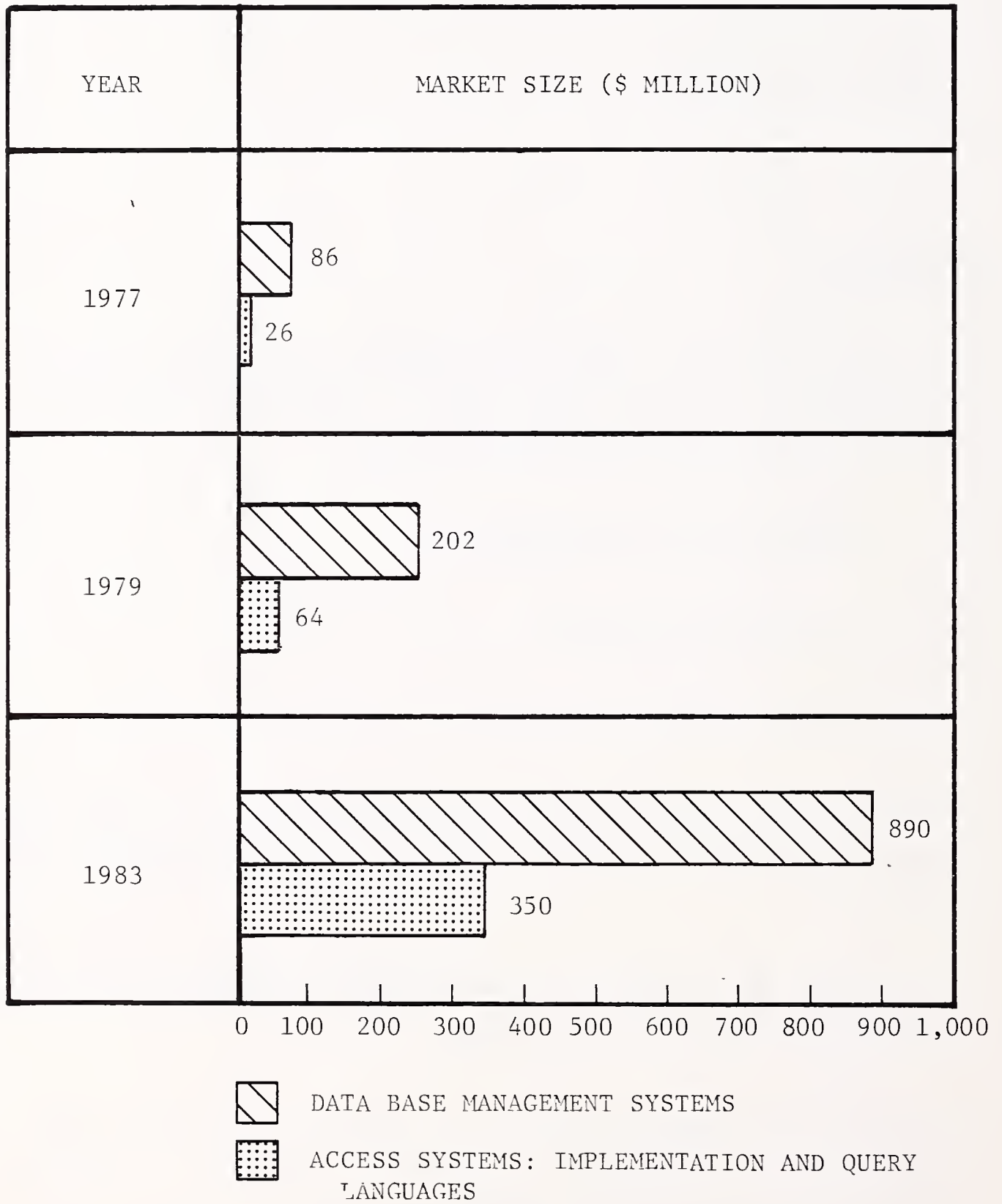
## II EXECUTIVE SUMMARY

### A. GENERAL

- This research project shows that NOMAD as presently constituted is an implementation language rather than a Data Base Management System (DBMS). Characteristics that support this are:
  - Inability to handle large files.
  - Interpreter not compiler.
  - Interactive mode of operation.
- The market for Access Systems (AS) (implementation and query languages) actually grows faster than that for DBMS over the forecast period, as shown in Exhibit II-1.
- For purposes of this report, Access Systems exclude RPG and the standard languages of COBOL, BASIC, PL/I, etc.
- The market for DBMS and AS is also examined by the intended user. INPUT believes that over 90% of the current use of DBMS and AS for applications development is due to EDP departments, either central or decentralized.

# EXHIBIT II-1

## GROWTH OF INFORMATION ACCESS AND MANAGEMENT SYSTEMS



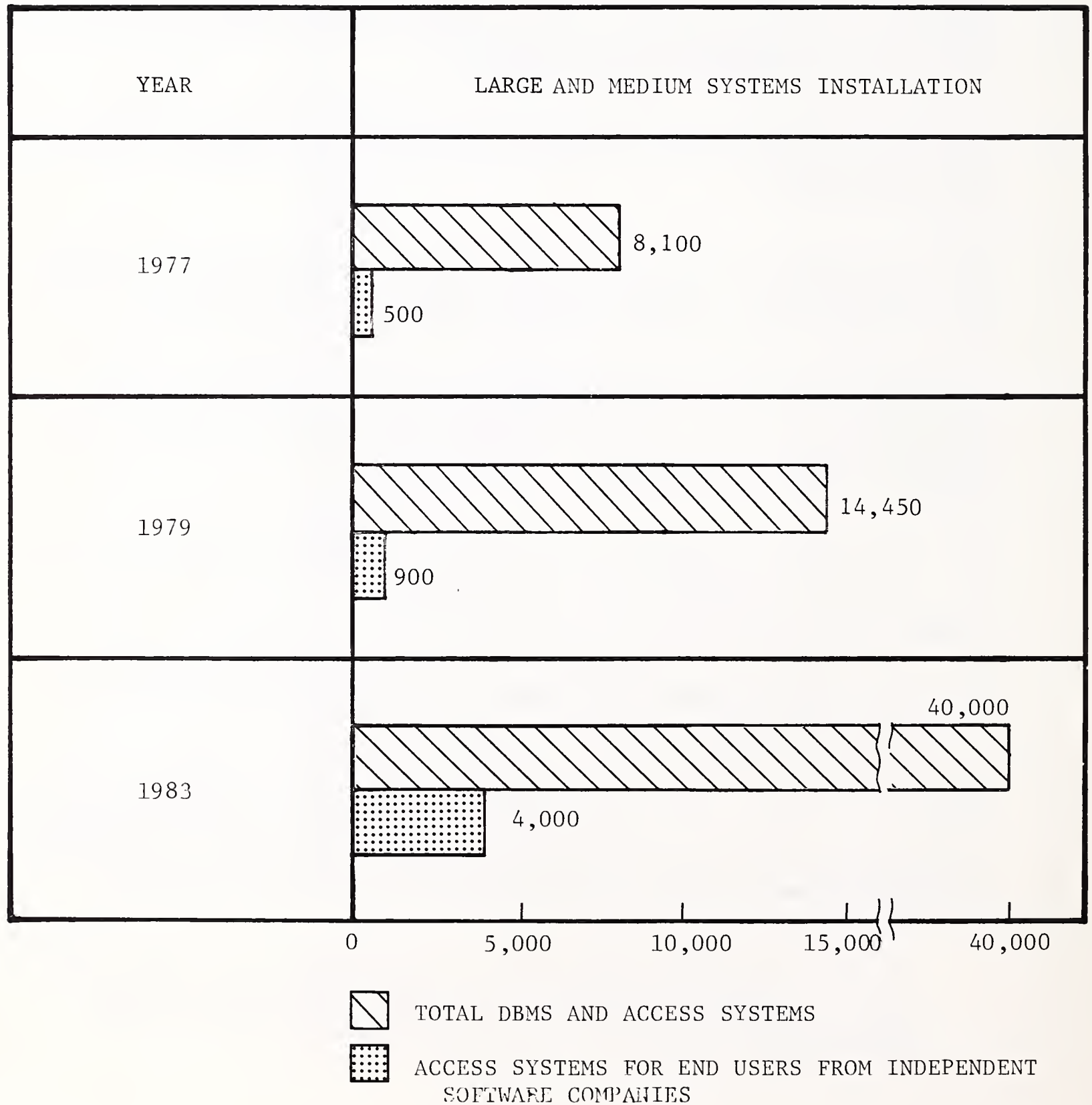
Actual use of the applications, once developed, has a higher proportion (perhaps as high as 30%) for direct end user interaction.

## B. MARKET FOR NOMAD

- NOMAD is primarily targetted on the end user rather than EDP departments. Similar products would be RAMIS and FOCUS.
- Examples of Access Systems primarily used by EDP departments are MARK IV and EASYTRIEVE.
- The third category of use is that of DBMS used by EDP departments; products such as IMS, TOTAL, ADABAS, and System 2000 fall into this category.
- Using this structure, the potential market in terms of numbers of installations for NOMAD is only 6% of the total of DBMS and AS in 1979, increasing to 10% by 1983, as shown in Exhibit II-2.
  - Shipments of products in the NOMAD category by independents will increase from 200 in 1979 to 1,300 in 1983.
  - An additional market will emerge by 1983 of sales of a NOMAD product to small systems.
- Range of penetration that NCSS could likely achieve over the forecast period is based on the assumption that NOMAD achieves second place behind RAMIS and its derivatives in this market category.
  - On this basis, NCSS would achieve a shipment rate of five systems (3% of the market in 1979) and 190 systems (15% of the market in 1983).



EXHIBIT II-2  
POTENTIAL MARKET FOR NOMAD



- By 1983, NCSS would then have 11% (400 systems) of the installed base in this target category.
- A minimum level of installation that would be justified by a continuing operation would be 300 systems.
- If IBM did not introduce a product in this category over the forecast period and if NCSS could replace RAMIS with NOMAD as the number one product (there is evidence to support this possibility), the theoretical upper limit of installations approaches 3,000.
- Therefore, the upside potential is very large.

### C. SALES AND MARKETING CHARACTERISTICS

- Prospects most likely to be receptive to NOMAD are:
  - Very large companies.
  - Existing users of DBMS and other Access Systems.
  - Existing users of NOMAD.
  - Organizations with high end user requirements; typically they will have an in-house timesharing function.
- Industry sectors which contain the most likely prospects are:
  - Banking and Finance.
  - Discrete Manufacturing.

- Process Manufacturing.
- Federal Government.
- Little advantage to industry specialization: these products are sold to EDP departments. User documentation and support which show functional use may be an advantage.
- As stated above, NOMAD will have to be sold to the EDP department. Initial sales interface will be to technical staff (frequently, technical evaluation committees will be formed). However, because of the use of the product (not so much its cost) approval will have to come from EDP managers.
- This requires the following:
  - Pre-selling of EDP managers by suitable promotion.
  - Strong technical sales capability.
  - Thorough technical documentation.
- End user impact on the buying decision is small but will increase over the next five years. However, EDP managers will almost always be the decision makers.
- There is little chance of companies "converting" existing applications to a new product such as NOMAD, especially if they have to do any significant work. Exceptions to this occur when an existing product loses its support.
- On the other hand, applications could be redesigned in terms of NOMAD or any other new product when the existing system must be replaced. In fact, when an existing system breaks down the ability to replace the system quickly can be a driver to a product like NOMAD.



- It should be noted that conversion of large applications using DBMS such as IMS is extremely difficult and generally not undertaken. However, for small applications written under an Access System, conversion may be more easily undertaken.
- The driving force for acquiring DBMS and Access Systems is not conversion but new application development.

#### D. PRICING FOR NOMAD PRODUCT

- NCSS should offer NOMAD on lease and purchase bases.
  - Base purchase price for the large system version should be \$30,000. Features should be priced separately to reach a total of approximately \$60,000.
  - Lease price for the base product should be \$950 per month on a three year lease. (38% of purchase price on annual basis).
  - Maintenance should be at least 10% of purchase price on an annual basis or \$3,000 for the basic product.
  - Maintenance for the first year for the purchased product is included in the sales price.
  - Maintenance for succeeding years should be provided on a flat annual fee basis which should be increased each year.
- Initial training and one set of documentaiton should be "bundled" into the purchase/lease price.
  - All succeeding training should be priced profitably.

- All documentation should be priced profitably.
- Audio-visual and extensive user aids should be provided and priced separately.
- Consulting and other professional services should be priced profitably and sold with the product.

#### E. SUPPORT AND TRAINING REQUIREMENTS

- For in-house users, approximately five days of training will have to be provided at the programmer level. This will enable the user to train several people on the programming staff who in turn will work with their end users.
- NCSS may have to provide some end user training, but this can be charged separately.
- After initial training and installation very little training and technical support is required. What is required by the EDP departments can be provided by telephone.
- Documentation must be thorough technically (i.e., at the systems level) and easily useable at the end user level. Thus two kinds of documentation will be required.

#### F. SALES AND MARKETING ORGANIZATION

- NCSS should do its own sales and marketing. Use of a third party would give loss of control and could impact other revenue streams. Also, the problems of product maintenance and enhancement are magnified.

- A further consideration is the role of current RCS sales staff in selling NOMAD as a product. INPUT considers that a separate sales and marketing structure is necessary, possibly within the equipment company.
  - Sales are to EDP departments not end users.
  - Technical capabilities are required.
  - Sales cycle is different.
- Technical support staff should be separated from the RCS support staff. They have to emphasize keeping the product compatible with IBM: the RCS NOMAD support does not have to do this. This is a very significant problem and IBM's hardware/firmware/software (HFS) strategy will increase it.
- In terms of providing it on an OEM basis to computer equipment suppliers, Access Systems and DBMS are relatively unimportant to PCM suppliers, with the exception of Amdahl. The cost of support and keeping up to date with IBM may not be justified by the returns.
- Also, if a version is supplied to hardware companies to address the in-house timesharing and end user standalone system markets, there will be an impact on NCSS on-site hardware sales.

#### G. COMPETITIVE SYSTEMS

- Main competition to NOMAD will come from IBM from product(s) in this area which will be announced in the next two years.

- Of existing products, RAMIS and FOCUS are the strongest competitors. There is no consistent data available from users in their comparative strengths and weaknesses. However, they do require far less core than NOMAD. This will be a problem for NOMAD in competitive situations.
- On the DBMS products, the weaknesses are performance related; high amount of overhead and large use of resources figured as prominent complaints.
- For DBMS products, the strengths are flexibility, reduced applications development, and better control of data. For products other than IMS, particularly ADABAS, System 2000, and TOTAL, ease of use was a particular strength.
- The RCS DBMS products also were regarded as easy to use. NOMAD users particularly felt this, except for some concern about designing files.
- Weaknesses of NOMAD generally are a lack of function and features. This is the main reason for users not considering NOMAD as a true DBMS. It is regarded as a good report writer.
- System features required by DBMS users are, in priority order:
  - Communications interface.
  - Host language interface.
  - Query language.
  - Data dictionary.
  - Data manipulation language.
  - Report writer.

- Interfaces to other DBMS files.
- To accommodate user needs as a DBMS, NCSS would have to significantly alter the product:
  - Handle large files effectively and efficiently.
  - Batch operation as well as interactive.
  - Compilation as well as interpretive versions.
  - Provide all the features mentioned above except the last.
- Three specific features a DBMS should support according to the majority of respondents were procedural compilation capabilities, multiple concurrent update, and variable length records.
- As an Access System, NCSS may well have to pay the core requirements. Also, graphics and text handling capabilities should be added. Other features will also be required as time progresses.
- Needless to say, NOMAD must be IBM operating system compatible.
- The impact of future technological developments was considered in detail in developing the forecasts for DBMS in the "Data Base Management System Software Markets" report. They also have been considered in the Access Method forecasts.
  - The price impact is through the increase in use of DDP and also of DBMS through back-end processors.
  - This increase will stimulate the growth of the Access System market and has been factored into the forecasts.



- These developments actually will cause the Access System market to grow faster than that for DBMS.
- Also, IBM's HFS strategy and new product announcements will cause its market share to increase rapidly.
- The market for mini-based and micro-based products will explode in the early 1980s in terms of number of installations. As shown in the DBMS report and this one the market size (in dollars) impact will not be as great.

## H. MIGRATION

- The research shows that there is a natural migration path from external use of NOMAD to an in-house product.
  - This would be for the larger users of NOMAD who also had access to their central EDP system.
  - As networks become more readily available, even remote locations will be able to migrate.
  - About 20% of NOMAD users and other RCS DBMS users would consider such a migration path.
  - The average monthly expenditure at which users would consider migration is \$8,200.
- The market potential, therefore, is the number of NOMAD users over \$8,200 times the sales price of the software product. If this price was \$30,000, that is the equivalent of four months operation. The negative self-impact potential is obvious.

- As far as migration from IMS is concerned, there is no current potential for migration to NOMAD. For other systems:
  - Total replacement of IMS could occur with companies who have used it for one to two years and have had serious problems.
  - Companies who have used IMS for four to seven years (and are large EDP centers) could be good prospects for an additional DBMS, but it would never replace IMS due to the investment in applications development.

## I. SUMMARY

- NOMAD as it exists today can compete with RAMIS II, FOCUS, and a few others. With some major modifications, it can compete with MARK IV. Competition with the major DBMS seems beyond current capabilities.
- Cost to convert to an IBM operating system and to maintain rapid and effective response to changes will be considerable.
- Self-impact in terms of current and projected revenue streams of offering NOMAD as a product should be closely examined. This should cover revenues from RCS and the Series 3200. INPUT considers the potential negative impact could more than offset the gains from software sales.
- Finally, the only effective way to sell NOMAD as a product would be through a separate sales force. In order to obtain efficiency, other products would be needed. What would they be?

- INPUT's recommendation is that NCSS does not enter this market with NOMAD. If it wants to participate in the DBMS market, it should acquire or develop a product specifically for that market using its knowledge and capabilities.

### III MARKET ANALYSIS





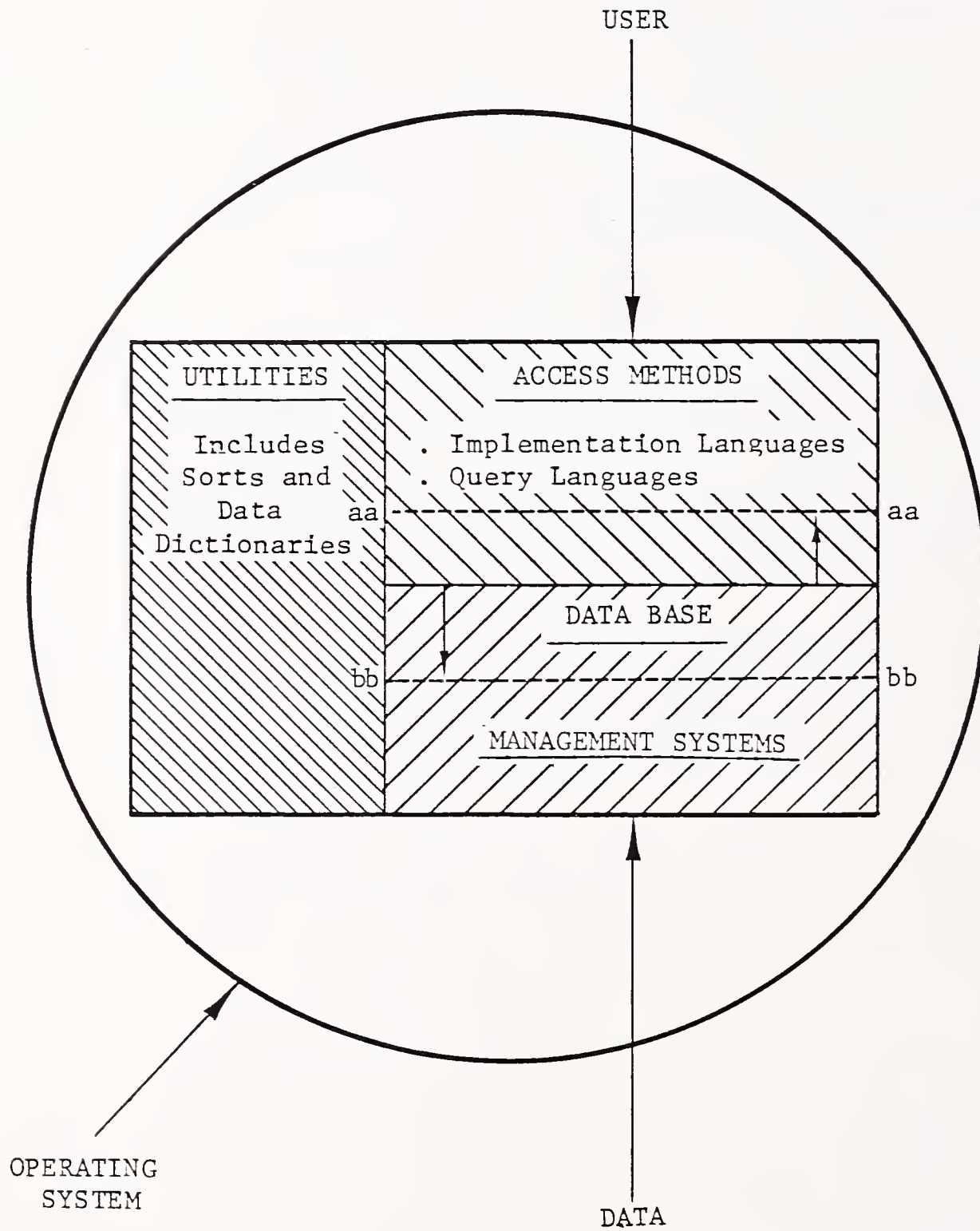
### III MARKET ANALYSIS

#### A. GENERAL MARKET FORECASTS

- As shown in Exhibit III-1, INPUT categorizes software systems that handle data and interface with users into several closely related categories.
  - A data base management system is a software system whose primary function is to manage structured data.
  - An implementation language is a software system whose primary function is to develop applications programs. It may have DBMS functions; it is likely to interface with more than one DBMS.
  - A query language is a software system whose primary function is to access and process data on an ad hoc basis and present it to the user in a format of his definition.
- As shown in Exhibit III-1 by the line "aa," DBMS are increasingly including access methods, while implementation languages, in some cases, are including DBMS features as shown by the line "bb." INPUT considers that the nature of these software systems is such that, while they will retain their innate characteristics over the forecast period, differentiating between the two groups of products will be increasingly difficult.

EXHIBIT III-1

RELATIONSHIP OF DBMS SOFTWARE TO OTHER  
SYSTEMS SOFTWARE



- This report addresses the market for NOMAD as a DBMS and as an Access System (Implementation Language and/or Query Language).
- Another vector in the market that is examined in this study is the user of the software. The two types of users, as shown in Exhibit III-2, are EDP departments and end users. As shown by the research, EDP departments are the only users of DBMS in their systems and programming departments. Although Access Systems (AS) are primarily used by EDP departments, there are some products that are being aimed at end users; RAMIS and DRS, with their English language interfaces, are examples of such products.
- Most "DBMS" offerings from RCS vendors fall into the Access System/End User market.
- In the INPUT report on "Data Base Management Systems Software Markets," the 1977 U.S. market for DBMS was estimated at \$86 million from 6,300 installations. The prime products were identified as in Exhibit III-3.
- INPUT estimates the number of Access System installations in the U.S. to be approximately 5,000 for independent suppliers. This number of installations excludes languages such as COBOL, FORTRAN, BASIC, APL, and ALGOL. It also excludes installations of RPG from IBM and similar languages from other manufacturers. It includes GIS from IBM.
- The main Access Systems listed in Exhibit III-4 include their suppliers' claimed number of installations worldwide, as listed in DATAPRO (May 1978) and from other sources. Discounting exaggerations and international installations, INPUT estimates approximately 5,000 such systems to have been installed by 1977 in the U.S.
- In order to evaluate product market potential, computer installations are categorized by size and the number of installations in each size estimated for the forecast period. The potential market for NOMAD, as currently conceived, excludes small and very small systems. However, by 1981, some small

# EXHIBIT III-2

## INFORMATION ACCESS AND MANAGEMENT SOFTWARE CATEGORIES

SOFTWARE TYPE	USER	
	EDP DEPARTMENT	END USER
DBMS	IMS TOTAL	---
ACCESS SYSTEM	MARK IV EASYTRIEVE	RAMIS DRS

## EXHIBIT III-3

IDENTIFIED VENDOR REVENUES FROM DBMS  
AND NUMBER OF PACKAGES INSTALLED

DBMS NAME	VENDOR	YEAR INTRODUCED	TOTAL NO. INSTALLED	1977 REVENUE		
				IN-HOUSE SALES	RCS	TOTAL
ADABAS	SOFTWARE AG	1971	275	\$5.0M	<1%	\$5.0M
DBMS-10	DIGITAL EQUIPMENT	1973	65	\$1.25M (E)		\$1.25M (E)
DBMS-20	DIGITAL EQUIPMENT	1976	30			
DMS-II	BURROUGHS	1976	40(E)	\$ .7M(E)		\$0.7M(E)
DMS 170	CONTROL DATA	1976	36	.4M(E)		\$0.4M(E)
DMS 1100	UNIVAC	1971	150(E)	—*	—*	—*
DATAKOM/DB	INSYTE DATAKOM	1971	125	\$1.2M	\$.3M	\$1.5M
IDMS	CULLINANE	1973	375	\$9.9M	\$.1M	\$10.M
IDS	HONEYWELL	1963	700(E)	—*	—*	—*
IDS-II	HONEYWELL	1975	16	.1M		.1M
IMS	IBM	1968	1100(E)	\$33.M(E)		\$33.M(E)
IMAGE 3000	HEWLETT PACKARD	1974	1000	2.1M(E)		2.1M(E)
INQUIRE	INFODATA	1969	100	2.5M	.1M	\$2.6M
MODEL 204	COMPUTER CORP. OF AMERICA	1971	30	\$1.M(E)	<1%	\$1.M(E)
SEED	INTERNATIONAL DATA BASE SYSTEMS	1977	12	\$ .3(E)		\$ .3(E)
SYSTEM 1022	SOFTWARE HOUSE	1973	40	\$ .8(E)	1.2M(E)	\$2.0M(E)
SYSTEM 2000	MRI SYSTEMS	1972	260	\$4.8	1.2M	\$6.0M
TOTAL	CINCOM	1969	>2,000	\$12.5(E)	2.5(E)	\$15.M
TOTALS			6,304	\$75.55	\$5.4	\$80.95

\*PROVIDED WITHOUT CHARGE TO HARDWARE INSTALLATIONS  
(E) = INPUT ESTIMATE



## EXHIBIT III-4

## MAJOR ACCESS SYSTEMS INSTALLED BY 1977

ACCESS SYSTEM	SUPPLIER	NUMBER OF INSTALLATIONS	ESTIMATED AVERAGE SALES PRICE
ASI-ST	APPLICATIONS SOFTWARE	275	\$20,000
CULPRIT	CULLINANE	450	20,000
THE DATA ANALYZER	PROGRAM PRODUCTS	325	17,000
DATA-MAN	DATA-MAN	150	12,000
DATA-QUERY	INSYTE/ADR	-	-
DRS/370	A.R.A.P.	80 }	40,000
DRS/2	A.R.A.P.		10,000
DYL 260	DYLAHOR SOFTWARE SYSTEMS	800	4,000*
EASYTRIEVE	PANSOPHIC SYSTEMS	1,300	12,500
EXTRACTO	OPTIPRO	300	15,000
FOCUS	INFORMATION BUILDERS	20	50,000
GIS	IBM	400	45,000*
INQUIRE	INFODATA SYSTEMS	100	65,000
IRS	SIGMA DATA COMPUTING	60	20,000
MARK IV	INFORMATICS	1,300	20,000
QUERY 5	AZREX	110	10,000
QUIKJOB	SYSTEM SOFTWARE SUPPORT	400	4,000
RAMIS II	MATHEMATICA	1,000	35,000
RSVP	NCI	120	4,000
SCORE	INFORMATICS	410	17,500
TOTAL NUMBER OF USERS		7,600	

\*MONTHLY LEASE CONVERTED TO 36 MONTH TOTAL

systems will be able to use a product similar to NOMAD because of price/performance improvements. Hence, the potential market will start to be significantly increased, as shown in Exhibit III-5.

- Overall, the number of installed products in potential NOMAD markets will increase from 8,800 in 1977, to 14,400 by 1979, to 140,000 by 1983.
- In the same period the average price of the products will change, as shown in Exhibit III-6. While discount pricing for multiple installations to large users will apply significantly, addition of features will more than compensate for reductions due to discounts. For medium and small installations, discount structures will not generally apply.
- Maintenance charges for purchased products will also increase, as shown in Exhibit III-7.
- A significant factor in the increasing use of DBMS/AS at the small system level will be the growth of distributed data processing. As computers are distributed and connected through networks in organizations, the need to have products which end users can use to develop their own small and ad hoc systems will increase dramatically. As a result, the market for Access Systems in the small systems area will grow much more rapidly than in other areas, as shown in Exhibit III-8.
- The general price characteristics of Access Systems are such that large systems average about one-third of the price of large DBMS while medium-sized systems average about half the price of medium-sized DBMS. This is the prime reason for the market size variance; in numbers of installations the types of systems run very parallel.

## EXHIBIT III-5

FORECAST OF INFORMATION ACCESS AND  
MANAGEMENT SYSTEMS INSTALLATIONS

YEAR/TYPE OF SYSTEM	NUMBER OF INSTALLATIONS BY SIZE OF SYSTEM			
	LARGE	MEDIUM	SMALL	TOTAL
<u>1977</u>				
DBMS	1,600	2,700	2,000	6,300
ACCESS SYSTEMS	1,500	3,000	500	5,000
TOTAL	3,100	5,700	2,500	11,300
<u>1979</u>				
DBMS	2,500	4,600	5,000	12,100
ACCESS SYSTEMS	2,250	5,100	2,500	9,850
TOTAL	4,750	9,700	7,500	21,950
<u>1983</u>				
DBMS	7,000	13,000	60,000	80,000
ACCESS SYSTEMS	7,000	13,000	40,000	60,000
TOTAL	14,000	26,000	100,000	140,000
SIZE OF COMPUTERS PRIMARILY COVERED	IBM SYSTEM/ 370 MODEL 158 AND LARGER, AND EQUIVALENTS	IBM SYSTEM/ 370 MODEL 135 TO MODEL 155 AND EQUIVALENTS	IBM SYSTEM. 32 AND SERIES 1 TO IBM SYSTEM/ 370 MODEL 125	

## EXHIBIT III-6

FORECAST PRICE CHANGES FOR INFORMATION  
ACCESS AND MANAGEMENT SYSTEMS

YEAR AND TYPE OF SYSTEM	AVERAGE PURCHASE PRICE BY SIZE OF SYSTEM		
	LARGE	MEDIUM	SMALL
<u>DBMS</u>			
1977	\$ 100,000	\$ 36,000	\$ 3,000
1979	115,000	44,000	4,000
1983	150,000	64,000	6,000
<u>ACCESS SYSTEMS</u>			
1977	\$ 30,000	\$ 15,000	\$ 4,000
1979	32,000	16,500	5,000
1983	45,000	20,000	6,000

# EXHIBIT III-7

## FORECAST MAINTENANCE PRICE CHANGES FOR INFORMATION ACCESS AND MANAGEMENT SYSTEMS

YEAR AND TYPE OF SYSTEM	AVERAGE PURCHASE PRICE BY SIZE OF SYSTEM		
	LARGE	MEDIUM	SMALL
<u>DBMS</u>			
1977	\$ 8,000	\$ 3,000	\$ 600
1979	11,000	4,000	800
1983	18,000	6,000	1,400
<u>ACCESS SYSTEMS</u>			
1977	\$ 2,400	\$ 1,200	\$ 600
1979	3,200	1,500	800
1983	5,600	2,400	1,400



## EXHIBIT III-8

MARKET FORECAST FOR INFORMATION  
ACCESS AND MANAGEMENT SYSTEMS

YEAR AND TYPE OF SYSTEM	MARKET BY SIZE OF SYSTEM* (\$ MILLIONS)			
	LARGE	MEDIUM	SMALL	TOTAL
<u>1977</u>				
DBMS	54	28	4	86
AS	15	10	1	26
TOTAL	\$69	\$38	\$5	\$112
<u>1979</u>				
DBMS	118	65	18	201
AS	40	20	3	63
TOTAL	\$158	\$85	\$21	\$264
<u>1983</u>				
DBMS	430	250	185	865
AS	140	80	120	340
TOTAL	\$570	\$330	\$305	\$1,205

\*EXCLUDES VERY SMALL SYSTEMS

## B. NOMAD POTENTIAL MARKETS

- NOMAD must be made to run under standard IBM operating systems in order to have any significant market potential. The following forecasts are based on NOMAD being able to run under the various versions of DOS and OS.
- The research clearly shows that NOMAD must be regarded, in its present term, as an Access System for end users. It is not equipped to be used internally within EDP departments. Thus, it is thus in competition with RAMIS II, FOCUS, and very few other products.
- IBM does not offer an equivalent product as yet, but INPUT expects to see one announced with the new communications/DDP systems forthcoming in the next two years. It should be noted that this is a point of contention in the industry; some people consider IBM will not provide end user oriented implementation or query languages until the new computer systems become available in the 1981-1983 period.
- The number of installations of end user oriented products is relatively small, as shown in Exhibit III-9. However, their proportion of the market will increase extremely rapidly in the early 1980s as end user interaction with computer systems becomes almost contagious. These are the target markets for NOMAD.
- However, INPUT projects that the market shares of the computer equipment vendors will increase rapidly, as shown in Exhibit III-10.
- Thus, the target market for NOMAD is 200 shipments in 1979, growing to 1,300 in 1983, in large and medium-sized systems. Some small portion of the 500 small system shipments in 1983 will also be open to a NOMAD type of product. At an average price of \$30,000 in 1979, and in 1983 (because of changing mix of sales by size and price changes balancing out) this corresponds to a \$6 million potential market in 1979 and a \$40 million market in 1983.

## EXHIBIT III-9

FORECAST OF INFORMATION ACCESS AND MANAGEMENT  
INSTALLATIONS BY TYPE OF USER

SYSTEM SIZE AND TYPE OF USER	CUMULATIVE NUMBER OF INSTALLATIONS BY YEAR		
	1977	1979	1983
<u>LARGE</u>			
EDP DEPARTMENT	2,800	4,000	10,000
END USER	300	750	4,000
TOTAL	3,100	4,750	14,000
<u>MEDIUM</u>			
EDP DEPARTMENT	5,500	9,000	20,000
END USER	200	700	6,000
TOTAL	5,700	9,700	26,000
<u>SMALL</u>			
EDP DEPARTMENT	2,500	7,400	90,000
END USER	-	100	10,000
TOTAL	2,500	7,500	100,000

## EXHIBIT III-10

FORECAST OF MARKET SHARES OF INDEPENDENTS AND  
COMPUTER EQUIPMENT COMPANIES IN TARGET MARKETS\*

SIZE OF SYSTEM/ TYPE OF VENDOR	YEAR				
	1979	1980	1981	1982	1983
<u>LARGE/MEDIUM</u>					
COMPUTER EQUIPMENT VENDOR					
INSTALLATIONS	550	1,250	2,300	4,000	6,000
SHIPMENTS	300	700	1,150	1,700	2,000
INDEPENDENT					
INSTALLATIONS	900	1,300	1,900	2,700	4,000
SHIPMENTS	200	400	600	800	1,300
TOTAL					
INSTALLATIONS	1,450	2,550	4,200	6,700	10,000
SHIPMENTS	500	1,100	1,750	2,500	3,300
<u>SMALL</u>					
COMPUTER EQUIPMENT VENDOR					
INSTALLATIONS	50	750	2,000	4,250	8,750
SHIPMENTS		700	1,250	2,250	4,500
INDEPENDENTS					
INSTALLATIONS	50	250	500	750	1,250
SHIPMENTS		200	250	250	500
TOTAL					
INSTALLATIONS	100	1,000	2,500	5,000	10,000
SHIPMENTS		900	1,500	2,500	5,000

- The cumulative market for NOMAD in this period is 3,100 shipments with an approximate value of \$90 million. Maintenance, education, and other professional services associated with this market could provide a further \$90 million potential opportunity.

### C. NOMAD MARKET PENETRATION

- The level of penetration by NOMAD depends on the level of effort applied by NCSS and basic sales characteristics. INPUT's estimates of these sales characteristics are as follows:
  - One salesperson operating at full efficiency will sell approximately \$360,000 worth of new business per year.
  - The sales cycle for a product of this nature averages seven months.
  - The "learning curve" for salespeople selling a \$30,000 product is as follows:
    - . No sales in first six months.
    - . After nine months, operate at a two sales per year level.
    - . After 12 months, operate at a four sales per year level.
    - . After 18 months, operate at eight sales per year level.
    - . After 24 months, reach "steady state" and operate at 12 sales per year level.



- It should be noted that the "start-up" period can be relatively long. One current successful vendor of DBMS had no sales in the first 18 months of operation.
- Based on these performance characteristics, NOMAD could probably achieve a 15% level of market penetration (in terms of units sold) by 1983, as shown in Exhibit III-11. The following basic assumptions are made:
  1. NCSS obtains the "Number 2" spot behind Mathematica with RAMIS II over this period.
  2. IBM offers an end user Access System in the next 18 months to two years. This has the double impact of stimulating the market and of limiting the independents' share.
  3. There is no turnover in the sales force. This is an unrealistic assumption. However, turnover will be low in the first several years if the product is successful; the salespeople will be effectively "cream-skimming." Turnover will start to be a factor in the third year.
- The impact of changes in these assumptions is as follows:
  - If NCSS could become "Number 1" by displacing Mathematica, then the potential sales would more than double to 700 units installed by 1983. The level of sales per salesperson could increase to \$500,000 per year. However, the sales force would have to be expanded even faster and be over 50 people by 1983.
  - If IBM does not introduce a product in the next 18 months, then the potential market for NOMAD expands by a factor of three.
  - Turnover will have a negative impact on cumulative sales. Normal turnover in a start-up phase will result in a 20% smaller cumulative installation position by 1983.

## EXHIBIT III-11

## POTENTIAL SALES PERFORMANCE OF NOMAD

	YEAR					
	1979	1980	1981	1982	1983	CUMULA- TIVE TOTAL
<u>UNITS SOLD</u>						
FIRST 2 SALESPEOPLE	<del>5</del> <sup>4</sup>	16	24	24	24	<del>93</del> <sup>92</sup>
+2 SALESPEOPLE	-	4	16	24	24	68
+4 SALESPEOPLE	-	-	8	32	48	<del>78</del> <sup>88</sup>
+8 SALESPEOPLE	-	-	-	16	64	80
+16 SALESPEOPLE	-	-	-	-	32	32
TOTAL NUMBER SALESPEOPLE	2	4	8	16	32	-
TOTAL UNITS SOLD	5	20	48	96	192	361
PERCENT OF MARKET PENETRATION	3%	5%	8%	12%	15%	11%
VALUE OF UNITS SOLD (\$ MILLION)	\$0.2	\$0.6	\$1.4	\$2.9	\$5.8	\$10.0
MAINTENANCE (\$ MILLION)	-	\$ 0	\$0.1	\$0.2	\$0.5	\$ 1.0

- Thus, the range of potential installations for NOMAD from 1979 to 1983 is as follows:
  - Minimum, 300.
  - Probable, 400.
  - Maximum, 3,000.

#### D. NOMAD SALES AND MARKETING CHARACTERISTICS

##### I. PRICING

- INPUT recommends that NCSS offer NOMAD on a lease and purchase basis. Based on the results of this and other research, both methods are desired by users. INPUT believes NCSS should strongly promote the lease concept.
- The market for NOMAD is not very price sensitive. Users often spend more money evaluating DBMS and Access Systems than the systems cost. The reason is that users' total investment in people time, training, computer time and use will be far larger than the system purchase price.
- Based on market characteristics, INPUT recommends a pricing scheme as follows for the basic system:
  - Purchase price \$30,000 - including first year's maintenance.
  - Lease price of \$950 per month (38% of purchase price on an annual basis).
  - Maintenance price (at 10% of purchase price per year) of \$3,000 per year offered on a flat annual basis.

- Additional features should be priced separately. The target should be eventually to migrate buyers to a system which would cost twice as much as the base price (i.e., \$60,000 on the upper end).
- A DOS/VS version (effectively for the medium-sized market) should be priced at about 50% of the large system in base price (i.e., about \$15,000). However, additional feature pricing will not be so viable resulting in an eventual average sales price of from \$20,000 to \$25,000.

## 2. PROSPECTS

- The characteristics of prospects most likely to be targets for NOMAD are as follows:
  - Large companies; start at the top of the Fortune lists and work down. This came out strongly from the research.
  - Existing users of DBMS and other Access Systems; e.g., IMS and MARK IV.
  - Companies with large, central establishments and associated data processing centers; i.e., large numbers of end users in close proximity to the data processing installation.
  - Companies with large existing use of NOMAD in close proximity to the DP installations.
  - Target industry sectors should be banking and finance and discrete manufacturing; process manufacturing and the federal government would be the next ranking targets.
- There is some advantage to industry specialization from the sales aspect only. However, functional specialization (e.g., for finance departments) is probably more important. These products are sold to EDP departments not end users.

- Specialized support in use of the system (particularly documentation) will be increasingly important. Examples should be in terms of banking applications when selling to banks.

### 3. SUPPORT REQUIREMENTS

- Documentation must be thorough, technical and supported by a text processing capability. This is a different level to that required for RCS users.
- Support requirements are considerable:
  - For training, six to ten days should be provided with package purchase and three days with a monthly lease. Additional training should be priced to make a profit. Audio-visual aids and extensive documentation are required.
  - Since the package is being sold to EDP departments for them to work with end users, wider distribution of documents will result. Hence, documentation requirements will be significant in terms of numbers of documents and level of detail. All documents above an initial set should be priced to make a profit.
- Under no circumstances should maintenance be given away. Many software companies do this. Because of many changes in IBM hardware/firmware/software over the next five years there will be significant costs just to keep the product up-to-date. This is a major negative factor in the consideration.

### E. SALES AND MARKETING ORGANIZATION

- NCSS should not consider allowing NOMAD to be sold through a third party. Such an organization would target directly on NCSS services clients or potential on-site sales customers.



- NCSS must retain control.
- Although the results would indicate that current RCS salespeople could sell NOMAD to EDP departments, INPUT considers this approach would not work:
  - RCS salespeople are generally geared to sell to end users; they are selling solutions.
  - DBMS and Access Systems as packages are sold to EDP departments, moreover to technical people within these departments.
- RCS salespeople do not have the technical awareness to succeed in this market. They could be trained but this would be a waste.
- INPUT recommends that the best approach NCSS could adopt to selling NOMAD would be to set up a separate software company for sales development and support. This could be a subsidiary under its equipment sales group.
- Consideration of OEM sales is a possibility. However, research shows that availability of a non-IBM DBMS, let alone an Access System, is relatively unimportant to plug compatible equipment purchasers. Thus, PCM companies are relatively uninterested except possibly Amdahl which plans to move away from 100% IBM compatibility, INPUT believes.
- At the smaller computer level, any sales would impact the market potential of NCSS' on-site hardware. INPUT does not believe NCSS should confuse the market by separately selling such a product at this time. By 1982/1983, the market stratification may have settled enough so that a "mini-NOMAD" can be sold to small systems without impact on the 3200 sales program.

## F. PRODUCT CHARACTERISTICS

- From this research and other research, INPUT considers the following product characteristics are necessary for NOMAD to be viable in the software market. These are in order of priority:
  - Ability to operate under all versions of IBM OS/VS.
  - Ability to operate under DOS/VS.
  - Compilation capacity.
  - Interface with all standard IBM products, IMS, CICS, and languages.
  - Graphics package.
  - Text handling capability.
  - Interactive and batch facility.
- A particularly relevant example is that of General Motors' Relational General Information System (REGIS):
  - REGIS combines the features of relational information handling along with graphical, interactive, and statistical capabilities.
  - REGIS has been in use at GM for two years in a variety of applications. Project scheduling is a particularly successful application. A limitation of REGIS is that it cannot handle data bases over 5-10 million bytes.
  - General Motors reports: "Users love it."

- Access Systems such as NOMAD do not need data dictionaries; however, they become mandatory as you move into DBMS.



## IV USER ANALYSIS





## IV USER ANALYSIS

### A. INTRODUCTION

- The user analysis is based on 60 in-depth interviews conducted within four user groups segmented as follows:

<u>User Group</u>	<u>No. of Interviews Conducted</u>
Current In-House DBMS Users	20
Potential In-House DBMS Users	10
NOMAD Users	20
Other RCS DBMS Users	10

- The names and number of interviews conducted of the in-house DBMS users and other RCS DBMS users are listed in Exhibit IV-1.
- Fifty percent (10 respondents) of the NOMAD users and 60% (6 respondents) of other RCS DBMS users also reported having a DBMS on their in-house system.
- In contrast, 36% (5 respondents) of the in-house DBMS users reported using an outside DBMS on an RCS network. None of the potential in-house DBMS users reported using a DBMS on a network service.

## EXHIBIT IV-1

IN-HOUSE DBMS USERS AND OTHER RCS  
DBMS USERS INTERVIEWED

IN-HOUSE DBMS USERS		OTHER RCS DBMS USERS	
DBMS NAME	INTERVIEWS CONDUCTED	DBMS NAME	INTERVIEWS CONDUCTED
SYSTEM 2000	5	MAGNUM	2
IMS	4	IPL	2
IDMS	3	ALADIN	1
TOTAL	3	MINI-MIS	1
ADABAS	2	COMPOSITE	1
SYSTEM 1022	1	DMS II	1
DTSS-FIND	1	FOCUS	1
MDQS (HIS)	1	RAMIS	1

- The in-house EDP managers were not that knowledgeable about the use of RCS within their companies. When the five EDP managers were questioned on the name of the service vendor and DBMS package being used, only one knew both.
- When questioned on why they used an outside DBMS in addition to their in-house system, the most frequent reasons were:
  - Lack of an internal timesharing system.
  - Need for national coverage of a network service.
  - End user need for simple tools to do report generation.
  - Turnaround time from internal EDP department for application development is too long.
  - Need for ad hoc reporting capability.
- INPUT encountered difficulty in obtaining answers to questions asked of the NOMAD users and other RCS DBMS users. Many of the users from this group could not answer questions for the following reasons:
  - Lack of technical knowledge.
  - Some respondents were outside the EDP department and thus not in a position to make decisions.
  - Nine of the 30 companies did not have computers installed at their locations and were not experienced with the selection and acquisition aspects of software.

- Sixteen of the 30 companies' products had an in-house DBMS and were in various stages of planning for conversion of outside DBMS services to their in-house system or were seriously looking at the RCS minicomputer offerings.
- In order to present the results objectively, INPUT has attempted to document the number of responses received in order to reflect the sample size.

## B. USER EVALUATION OF DBMS PRODUCTS/SERVICES

### I. DBMS STRENGTHS AND WEAKNESSES

- The strengths and weaknesses of DBMS products as perceived by users are varied and very dependent upon applications use and implementation.
- If one statement had to be made on the key strengths and weaknesses of DBMS it would have to be: flexibility in handling various data elements; excessive overhead.
- A listing of the strengths and weaknesses as perceived by the users interviewed appears in Exhibits IV-2, IV-3 and IV-4.
- In all cases there appears to be no consistent pattern among in-house and RCS users in their perceptions of the relative strengths and weaknesses of the various DBMS products/services other than flexibility and ease of use.
- The only consistent complaint of in-house DBMS users and potential DBMS users is the high overhead caused by the DBMS.
- At least 50% of the RCS DBMS users could not comment on any weaknesses of the software due to their non-technical backgrounds.



## EXHIBIT IV-2

STRENGTHS AND WEAKNESSES OF DBMS PRODUCTS  
AS PERCEIVED BY IN-HOUSE DBMS USERS

DBMS NAME	STRENGTHS	WEAKNESSES
ADABAS (2)	EASY TO USE, LEARN (2 MENTIONS) IMPROVES APPLICATION DEVELOPMENT SIMPLE TO MAINTAIN	HIGH OVERHEAD DOESN'T HAVE CONCURRENT I/O
DTSS-FIND (1)	EASY TO USE, LEARN SUPPORTS FORTRAN	NO WEAKNESSES IN SOFTWARE
IDMS (3)	FLEXIBILITY (2 MENTIONS) MODELING CAPABILITIES CODASYL STANDARDS GOOD DATA MANIPULATION LANGUAGE EASY TO LEARN RECOVERY FEATURES	CPU CYCLES HIGH COMPLEX TO RE-ORGANIZE DATA BASE DOESN'T SUPPORT INVERTED LIST DOUBLED SPACE REQUIREMENTS
IMS (4)	STABLE PACKAGE (2 MENTIONS) EXCELLENT DATA COMMUNICATIONS IMPROVES APPLICATION DEVELOPMENT SUPPORTED BY IBM HIERARCHICAL STRUCTURE EASY TO IMPLEMENT PROGRAMMING STANDARDS	HIGH OVERHEAD PROCESSING VERY SLOW POOR MODELING CAPABILITIES NOT EASY TO MODIFY POOR PRODUCTION TOOL POOR RECOVERY
MDQS (HIS) (1)	EASY TO USE QUICK TURNAROUND	HIGH OVERHEAD, VERY SLOW POOR PRODUCTION TOOL
SYSTEM 1022 (1)	EASY TO USE FLEXIBLE	CAN'T DETERMINE WHAT IS HAPPENING INTERNALLY
SYSTEM 2000 (5)	NATURAL LANGUAGE (2 MENTIONS) QUERY LANGUAGE (3 MENTIONS) DB FUNCTIONS IN ON-LINE MODE FLEXIBLE DATA MANAGER DATA INDEPENDENCE IMPROVES APPLICATION DEVELOPMENT EASY TO SUPPORT, USE	SLOW ON-LINE UPDATE POOR DOCUMENTATION (2 MENTIONS) INVERTED LIST PROCESSOR DESIGN IS DIFFICULT
TOTAL (3)	FILE EXPANSION IS EASY PERFORMANCE MEASUREMENT REPORTS FAST RETRIEVAL LOGGING & RECOVERY ON-LINE CAPABILITIES WITH CICS EASY TO UNDERSTAND	SINGLE THREAD VENDOR SUPPORT POORER THAN IBM

( ) NUMBER OF RESPONSES

# EXHIBIT IV-3

## ADVANTAGES AND DISADVANTAGES OF DBMS PRODUCTS AS PERCEIVED BY POTENTIAL DBMS USERS

ADVANTAGES	DISADVANTAGES
<p>DATA INDEPENDENCE</p> <p>REDUCE REDUNDANT DATA (4 MENTIONS)</p> <p>IMPROVE DATA INTEGRITY</p> <p>FLEXIBILITY (3 MENTIONS)</p> <p>BETTER SECURITY</p> <p>BACK UP &amp; RECOVERY</p> <p>SUPPORT &amp; ENHANCEMENTS</p> <p>CENTRALIZATION OF DATA (2 MENTIONS)</p> <p>DATA ACCESS (2 MENTIONS)</p> <p>INTEGRATED SYSTEM</p> <p>EASY TO LEARN</p> <p>IMPROVE APPLICATION DEVELOP- MENT (3 MENTIONS)</p> <p>LOGICALLY RELATE INFORMATION</p>	<p>HIGH OVERHEAD (5 MENTIONS)</p> <p>HIGHER CPU CYCLES</p> <p>CUMBERSOME, HARD TO USE</p> <p>SLOWER ACCESS METHOD</p> <p>EXPENSIVE TO CONVERT (3 MENTIONS)</p>

## EXHIBIT IV-4

STRENGTHS AND WEAKNESSES OF RCS DBMS PRODUCTS  
AS PERCEIVED BY RCS DBMS USERS

DBMS NAME	STRENGTHS	WEAKNESSES
NOMAD (20)	SIMPLE TO USE/LEARN (11 MENTIONS) GOOD REPORT WRITER (5 MENTIONS) RICH IN CONSTRUCTS AD HOC REPORTING CAPABILITY (2 MENTIONS) GOOD FOR SINGLE LISTS VERY SYNTACTICAL GOOD SORTING CAPABILITIES ENGLISH LIKE LANGUAGE(2 MENTIONS) INTERACTIVE EDITING ENVIRONMENT (2 MENTIONS) GOOD DATA CONTROL REFORMATING IS GOOD FLEXIBLE (6 MENTIONS) RELATIONAL & HIERARCHICAL STRUCTURES	NOT AWARE OF ANY (10 MENTIONS) INABILITY TO DEAL WITH ARRAYS CAN'T TELL WHAT'S HAPPENING INTERNALLY DESIGNING FILES IS COMPLEX (2 MENTIONS) RELATIONSHIP TO OTHER SEGMENTS IS WEAK DIFFICULT TO LOAD DATA CAN'T HANDLE COMPLICATED MATHEMATICS DIAGNOSTICS ARE POOR HIGH RESOURCE USAGE NO TABLING FACILITIES FOR STORAGE CAN'T PASS SELECTION PROCEDURES FROM EXEC TO NOMAD CAN'T DO VERY MANY COMPLEX THINGS
ALADIN	NO COMMENT	NOT AS GOOD AS SOME OTHERS THINKING OF RE-DOING IN COBOL
COMPO- SITE	GOOD REPORT WRITING	NOT A TRUE DBMS
DMS II	EASY TO USE	DON'T KNOW ANY
IPL (2)	DATA RETRIEVAL ENGLISH TYPE LANGUAGE IMPROVES APPLICATION DEVELOPMENT COMPILER NOT AN INTERPRETER STRUCTURED PROGRAMMING LANGUAGE	NOT CODASYL STANDARD STRUCTURED PROGRAMMING MORE DIFFICULT TO LEARN
MAGNUM (1)	INTERFACE WITH OTHER PRODUCTS ON THE NETWORK	DON'T KNOW ANY
MINI- MIS	EASY TO LEARN, GOOD FOR USERS	NO WEAKNESSES IN SOFTWARE EXPENSIVE
RAMIS	PROGRAMMING IS EASY AUTOMATIC LINKING	NO WEAKNESSES IN SOFTWARE EXPENSIVE

## 2. DESIRED DBMS FEATURES

- Users were asked to rate the importance of certain features of DBMS and these results are presented in Exhibit IV-5.
- It should be noted that several NOMAD and other RCS DBMS (six out of 30) users could not respond at all to this question and others could only respond to some of the questions.
- The three most important features cited by the in-house and potential DBMS users were a communications interface, host language interface and query language.
- The three most important features cited by NOMAD users and other RCS DBMS users were report writers, data dictionaries, and host language interfaces.
- Features that received almost equal ratings among the four groups were query languages, data manipulation language and host language interfaces.
- The lowest rating received of any feature cited was interface to other DBMS files. All four groups gave this a relatively low rating.
  - Many of the companies gave this a low rating because they do not believe they need more than one DBMS.
- What is surprising is the much higher rating the RCS DBMS users gave to data dictionaries (4.5) than the in-house/potential DBMS users (3.8).
  - INPUT was aware of the mixed reaction to data dictionaries at the interim review meeting and attempted to probe users for further explanations. The following is a representative sample of the responses received:



## RESPONDENT RATINGS OF IMPORTANT DBMS FEATURES

FEATURE	IN-HOUSE DBMS USER	POTENTIAL IN-HOUSE DBMS USER	AVERAGE RATING	NOMAD USERS	OTHER RCS DBMS USERS	AVERAGE RATING
DATA DICTIONARY	3.8	4.0	3.8	3.7	4.9	4.5
REPORT WRITER	3.4	2.7	3.2	4.6	4.1	4.5
QUERY LANGUAGE	4.1	3.7	4.0	4.6	3.7	4.1
DATA MANIPULATION LANGUAGE	3.6	4.1	3.7	4.1	4.0	4.0
COMMUNICATIONS INTERFACE	4.5	4.6	4.5	3.7	3.0	3.6
INTERFACES TO OTHER DBMS FILES	2.0	1.5	1.7	2.5	2.1	2.4
HOST LANGUAGE INTERFACE	4.4	4.5	4.4	4.4	3.9	4.2

SCALE: 5 = HIGHLY IMPORTANT  
1 = NOT IMPORTANT



- . "Data dictionaries are only needed for large complex applications and are not needed for simple files, reports. We do both here and therefore rate them a 3." (In-house DBMS user)
  - . "No way to exist without one." (In-house DBMS user)
  - . "We've gotten by without one for three or four years. Now we want one." (In-house user)
  - . "Should be available, doesn't have to be an integral part of a DBMS." (NOMAD user)
  - . "Data dictionaries are extremely important later on when you have to do maintenance." (Other RCS DBMS user)
  - . "Only important if you have large files." (NOMAD user)
  - . "Our company thought a data dictionary was so important we developed our own." (In-house user)
- In summary, data dictionaries are important to companies who have large files, are heavily involved in maintenance, and are actively implementing new applications on the DBMS. For the inexperienced DBMS user or one with small files, they are relatively unimportant.
  - The disparity between the higher rating of data dictionaries of the RCS DBMS versus in-house users can be explained by a closer look at the respondents: 13 of the 19 who responded to this question, and rated data dictionaries very high, were also large in-house users of DBMS and familiar with their problems.
  - The other features mentioned (which received a wide range of response between in-house/potential DBMS users and RCS DBMS users) was report writers.

- Report writers generally received a very high rating among RCS DBMS users because of their ease of generating reports by non-technical personnel.
- The lower rating of in-house DBMS users can be attributed to their having a much higher ratio of programmers using the DBMS who can generate reports using another language; i.e., COBOL, and don't feel the necessity of having a good report writer coupled with the DBMS.
- Some responses from users interviewed on the importance of report writers:
  - . "Can supplement the system with COBOL."
  - . "It is more convenient to have all programmers talking the same language. If we had a report writer we would have to learn a new language. We don't do that much report generation."
  - . "The importance of report writers depends on the shop. COBOL shops would not rate report writers very high. I personally think they are important."
  - . "More money can be made with better thought out software rather than having a quick and dirty way of writing reports."
  - . "We're looking for a DBMS to interface with application programs not as a report writer."
  - . "Report writers degrade performance for other users. Can't run production, on-line, interactive systems with query languages and report writers."
  - . "Report writers are a function that a lot of people can work with outside the DBMS."

- DBMS with report writing capabilities are significantly more important to non-technical users than they are to EDP personnel who have both the capability and requirement for generating specialized reports.
- Host language interfaces required by users were:

<u>Language</u>	<u>Number of Mentions</u>
COBOL	36
FORTRAN	13
ASSEMBLER	8
PL/I	4
RP6	2
MACRO 10	1
BASIC	1

- Exhibit IV-6 presents the responses received when users were asked if a DBMS should support procedural compilation, multiple concurrent update and variable length files.
  - In-house DBMS and potential DBMS users rated these features much higher than RCS users. This is mainly due to a lack of technical knowledge by the RCS users: as many as 50% of the RCS users could not answer these questions.
  - Potential in-house DBMS users almost consistently rated these three features much higher than current in-house users.
- Multiple concurrent update received the highest rating of the three. Eighty-five percent of the in-house DBMS users and 80% of the potential DBMS users believed it was a necessary feature.

# EXHIBIT IV-6

## OTHER TECHNICAL FEATURES REQUIRED BY RESPONDENTS

FEATURE	IN-HOUSE DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS	NOMAD USERS	OTHER RCS DBMS USERS
<ul style="list-style-type: none"> <li>PROCEDURAL COMPILATION</li> <li>- Yes</li> <li>- No</li> <li>- Don't Know</li> </ul>	50% 40% 10%	70%  30%	55% 10% 35%	40% 10% 50%
<ul style="list-style-type: none"> <li>MULTIPLE CON- CURRENT UPDATE</li> <li>- Yes</li> <li>- No</li> <li>- Don't Know</li> </ul>	85% 10% 5%	80% 20%	45% 20% 35%	20% 30% 50%
<ul style="list-style-type: none"> <li>VARIABLE LENGTH RECORDS</li> <li>- Yes</li> <li>- No</li> <li>- Don't Know</li> </ul>	60% 35% 5%	80% 20%	55% 10% 35%	40% 10% 50%

- Although procedural compilation and variable length file support were rated somewhat lower, INPUT believes these are important features of a DBMS and should be seriously considered as features to include in a DBMS.

### 3. FILE SIZE REQUIREMENTS

- Users were asked what file size a DBMS should support and the response varied among respondents:
  - In-house DBMS users cited the file size of their current data bases in millions of bytes, thousands of millions of records, or number of cylinders used.
    - The only consistent measure to use was the group of ten respondents who reported the number in millions of bytes which ranged from 12.5 million to 710 million bytes. The average for all ten respondents was 270 million bytes.
  - Potential DBMS users responded to this question by what they anticipated they would require.
    - The range for six respondents who could cite millions of bytes was three million to two billion bytes with an average of 870 million bytes.
  - Only five of the NOMAD and other RCS DBMS users could define the size of their data bases in terms of millions of bytes. File sizes ranged from 200,000 to 100 million bytes of storage with an average of 22 million bytes.
- It is clear that in-house and potential DBMS users are dealing with much larger data bases than RCS DBMS users.



#### 4. IMPROVEMENTS TO EXISTING PRODUCTS

- The majority of improvements cited by in-house DBMS users and potential users centered around issues of performance; reduce overhead and amount of resources used and improve system performance (see Exhibit IV-7).
- The other improvement frequently cited by both in-house DBMS users and RCS developed users was to make DBMS products easier to use.
- The following DBMS improvements also received several mentions:
  - Improve data base restructuring.
  - Provide better back-up and recovery.
  - Improve report writing capabilities.
  - Improve documentation.
- It is interesting to note that none of the in-house DBMS users or potential DBMS users knew anything about the RCS developed DBMS products. All 30 companies interviewed from this group stated they were not familiar with the products and couldn't comment on improvements.
- Eight out of the 30 NOMAD and other RCS DBMS could comment on improvements to in-house developed DBMSs in addition to the products they were using on a network.

#### 5. DBMS USAGE BY TECHNICAL AND NON-TECHNICAL STAFF MEMBERS

- Exhibit IV-8 presents the responses received from all four groups on the percentage of use of the DBMS by technical versus non-technical staff.

## EXHIBIT IV-7

## SUGGESTED IMPROVEMENTS FOR DBMS PRODUCTS

IMPROVEMENTS CITED	IN-HOUSE DBMS PRODUCTS	RCS DBMS PRODUCTS	TOTAL NO. OF MENTIONS
<ul style="list-style-type: none"> <li>● REDUCE OVERHEAD, RESOURCES USED</li> <li>● IMPROVE SYSTEM PERFORMANCE</li> <li>● MAKE CONVERSION EASIER</li> <li>● PROVIDE INTERFACE TO A STATISTICAL PACKAGE</li> <li>● MAKE THEM MORE PORTABLE</li> <li>● STANDARDIZE DBMS</li> <li>● INTERFACE GRAPHIC OR PLOTTING CAPABILITY WITH REPORT WRITERS</li> <li>● USE RELATIONAL DATA MODEL</li> <li>● SHOULD COMPILE INSTEAD OF INTERPRET</li> <li>● SUPPORT MORE THAN ONE FILE STRUCTURE</li> <li>● PROVIDE MULTIPLE CONCURRENT UPDATE</li> <li>● ADD CONCEPT OF A LANGUAGE DRIVEN DBMS</li> </ul>	10 9 2  1 1  1 1  1  1	 1  2 1   1  1  1	10 10 2 2 2 2  2 1 1 1 1 1
<ul style="list-style-type: none"> <li>● OTHER IMPROVEMENTS               <ul style="list-style-type: none"> <li>- EASIER TO USE</li> <li>- DATA BASE RESTRUCTURING</li> <li>- BACK-UP &amp; RECOVERY</li> <li>- DOCUMENTATION</li> <li>- REPORT WRITERS</li> <li>- QUERY LANGUAGES</li> <li>- DATA MANIPULATION LANGUAGE</li> <li>- INTERFACE TO HOST LANGUAGE</li> <li>- INTERFACE TO OPERATING SYSTEM</li> <li>- DATA COMMUNICATIONS INTERFACE</li> <li>- LOAD PROCEDURES</li> <li>- RECOMPILE FEATURES</li> <li>- PERFORMANCE TOOLS</li> <li>- SECONDARY INDEXING</li> <li>- TRAINING CLASSES FOR USERS</li> </ul> </li> </ul>	     5 1 2 2 2 1 1 1 1 1 1 1 1 1 1	     2 3 1 1 1 1  1     1 1	     7 4 3 3 3 2 2 1 1 1 1 1 1 1 1

## EXHIBIT IV-8

DBMS USAGE BY TECHNICAL AND  
NON-TECHNICAL STAFF MEMBERS

IN-HOUSE DBMS USERS		POTENTIAL DBMS USERS		NOMAD USERS		OTHER RCS DBMS USERS	
% USED BY TECH- NICAL STAFF	% USED BY NON- TECHNICAL STAFF	% USED BY TECH- NICAL STAFF	% USED BY NON- TECHNICAL STAFF	% USED BY TECH- NICAL STAFF	% USED BY NON- TECHNICAL STAFF	% USED BY TECH- NICAL STAFF	% USED BY NON- TECHNICAL STAFF
100%	--	100%	--	--	100%	100%	--
70	30	50	50	80	20	--	100
10	90	100	--	100	--	--	100
100	--	90	10	40	60	--	100
95	5	100	--	--	100	--	100
20	80	100	--	40	60	10	90
100	--	90	10	--	100	70	30
50	50	100	--	90	10	--	100
100	--	100	--	--	100	20	80
10	90	--	--	--	100	1	99
100	--	--	--	50	50	--	--
100	--	--	--	100	--	--	--
100	--	--	--	10	90	--	--
5	95	--	--	--	100	--	--
20	80	--	--	--	100	--	--
10	90	--	--	100	--	--	--
25	75	--	--	--	100	--	--
80	20	--	--	40	60	--	--
61%*	39%*	92%*	8%*	35%*	65%*	20%*	80%*

\* AVERAGE PERCENT OF USE

- Current in-house users and potential DBMS reported a much higher ratio of use by the technical staff than the RCS DBMS users (61% and 92%).
- Whereas NOMAD and other RCS DBMS users reported 65% and 80% of the DBMS was used by non-technical staff members respectively.
- INPUT found that there was a very strong reluctance by some in-house DBMS and potential DBMS users towards allowing people outside the EDP department to use the system.
  - Several companies stated the DBMS products were too complicated for them to use directly and would only allow users to access data by means of other software tools.
  - Other companies simply stated they did not want users to have access to the system for fear of "messing up their files" or were concerned about performance.
    - As one user stated, "Users will get more involved as soon as ADABAS provides simpler tools which don't degrade performance."
- Approximately 50% of all respondents believed DBMS usage by non-technical staff members would increase over the next five years.
  - The remainder did not believe there would be any changes in their current distribution of use of the DBMS or felt users would not be involved for some time. (A few companies did not believe real user involvement would occur for ten years.)



## 6. TRAINING REQUIREMENTS

- Exhibit IV-9 presents the training requirements for DBMS products by the four groups interviewed.
- Although in-house and potential DBMS users reported a higher number of class days for programmers than the RCS DBMS users, it was not significant; approximately eight days versus five.
  - Not surprising, the companies which experienced the highest number of class days for training were the IMS users. The number of class days to learn IMS ranged from 7 to 44.
- In-house DBMS and potential DBMS users also reported a longer period of time before programmers gained proficiency in using the in-house DBMS versus RCS DBMS products.
  - Again, the difference was not significant: two months for in-house DBMS products versus five weeks for RCS products.
- The average number of class days for the non-technical staff was fairly consistent; approximately four days were required.
  - An average is not listed in Exhibit IV-9 for potential DBMS users because only two companies responded to this question and they both thought it would only take two days.
  - The other eight companies did not know what was required to train users or they did not plan to involve users.

## 7. TECHNICAL SUPPORT REQUIREMENTS

- Exhibit IV-10 presents the technical support requirements for all four groups surveyed during the first year of DBMS installation and current requirements.



EXHIBIT IV-9  
TRAINING REQUIREMENTS FOR DBMS USERS

TRAINING	IN-HOUSE DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS	NOMAD USERS	OTHER RCS DBMS USERS
CLASS DAYS FOR PROGRAMMERS	7.5	8	5	5
NUMBER OF MONTHS BEFORE PROGRAMMERS ARE PROFICIENT	2	2	5 WKS.	5 WKS.
CLASS DAYS FOR NON-TECHNICAL STAFF	4.5	--	4	4

## EXHIBIT IV-10

## TECHNICAL SUPPORT REQUIREMENTS

TYPE OF SUPPORT	IN-HOUSE DBMS USERS	POTEN. IN-HOUSE DBMS USERS	NOMAD USERS	OTHER RCS USERS
<ul style="list-style-type: none"> <li>FIRST YEAR <ul style="list-style-type: none"> <li>- VERY LITTLE AFTER INITIAL TRAINING, 1-3 HOURS PER MONTH, HANDLED BY TELEPHONE</li> <li>- AVERAGE SUPPORT, 3-10 HOURS PER MONTH, ON-SITE AND TELEPHONE</li> <li>- FAIRLY HIGH, 8-10 HOURS PER WEEK, TELEPHONE AND ON-SITE</li> <li>- HIGH, PEOPLE ON-SITE FOR 6 TO 12 MONTHS</li> <li>- DON'T KNOW</li> </ul> </li> </ul>	50% (10)	30% (3)	25% (5)	10% (1)
	15% (3)	10% (1)	20% (4)	40% (4)
			40% (8)	20% (2)
	20% (4)	30% (3)		
	15% (3)	30% (3)	15% (3)	30% (3)
<ul style="list-style-type: none"> <li>CURRENT REQUIREMENTS <ul style="list-style-type: none"> <li>- VERY LITTLE, IF ANY, SUPPORT REQUIRED</li> <li>- 1-4 HOURS PER MONTH, MAJORITY HANDLED BY PHONE</li> <li>- FAIRLY HIGH, 2-3 TIMES PER WEEK, PHONE AND ON-SITE</li> <li>- HIGH, VENDOR ON-SITE OR MORE THAN 8 HOURS OF SUPPORT PER WEEK</li> <li>- DON'T KNOW</li> </ul> </li> </ul>	85% (17)	40% (4)	20% (4)	20% (2)
			60% (12)	60% (6)
			15% (3)	
	10% (2)	30% (3)		
	5% (1)	30% (3)	5% (1)	20% (2)

( ) NUMBER OF MENTIONS

- Fifty percent of in-house users reported very little support was required after initial training during the first year the DBMS was installed.
  - The four in-house installations who required a high degree of technical support were three IMS installations and one ADABAS user who stated they were the 6th ADABAS installation in the U.S. and the first to install the on-line update feature.
- Potential in-house DBMS users were evenly divided on their anticipation of technical support requirements: 30% anticipated very little, 30% believed it would be high and 30% didn't know what to expect.
- Only 25% of the NOMAD users stated they required very little support from NCSS after initial training.
  - The majority of NOMAD users (40%) reported their support requirements were fairly high during the first year. (Many of these companies did not have technical personnel using the system and also had NCSS write the software.)
- The majority of the other RCS DBMS users (40%) reported requiring an average amount of support during the first year and only 20% stated it was fairly high.
- Eighty-five percent of the in-house DBMS users stated very little, if any, technical support was currently required. And when it is required, it's handled by phone.
- Forty percent of the potential DBMS users anticipated that they would not require very much support after the first year. However, 30% believed it would still be high.

- The majority of NOMAD and other RCS DBMS users (60%) reported that their current technical support requirements were averaging one to four hours per month.
- In summary, it was found that current in-house DBMS users and potential DBMS require less technical support than the RCS DBMS users.

## 8. LEVEL OF SATISFACTION WITH DBMS PRODUCTS

- All users reported a fairly high degree of satisfaction with the technical capabilities of their DBMS as shown in Exhibit IV-11.
- Ease of use for programmers was rated much higher than ease of use for non-technical staff by all three groups interviewed.
- Documentation received a lower rating for in-house DBMS and NOMAD users than it did by other RCS DBMS users.
- Vendor's technical support was rated higher by the RCS DBMS users than by in-house DBMS users.
- Vendor response to suggestions for improvements received the lowest rating.

## C. VENDOR SELECTION PROCESS

### 1. IN-HOUSE ORGANIZATIONS INVOLVED IN THE DECISION PROCESS

- Exhibit IV-12 represents the departments or individuals involved in the selection of DBMS products by the four groups interviewed.
- Current in-house DBMS and potential DBMS reported the following:

## EXHIBIT IV-11

## LEVEL OF SATISFACTION WITH DBMS

CRITERIA	IN-HOUSE DBMS USERS	NOMAD USERS	OTHER RCS DBMS USERS
TECHNICAL CAPABILITIES	4.4	4.3	4.1
DOCUMENTATION	3.7	3.6	4.1
EASE OF USE FOR - Programmers - Users	4.0 3.6	4.5 3.8	4.1 3.4
VENDOR TECHNICAL SUPPORT	3.8	4.4	4.3
VENDOR RESPONSE TO SUGGESTIONS FOR IMPROVEMENT	3.2	3.4	3.3

SCALE: 5 = HIGHLY SATISFIED  
1 = DISSATISFIED



## EXHIBIT IV-12

DEPARTMENTS/INDIVIDUALS INVOLVED IN DBMS SELECTION  
(NUMBER OF MENTIONS)

DEPARTMENT/INDIVIDUALS	IN-HOUSE DBMS USERS	POTENTIAL DBMS IN-HOUSE USERS	NOMAD USERS	OTHER RCS DBMS USERS	TOTAL NO. OF MENTIONS
EDP MANAGEMENT	20	10	3	3	36
DATA BASE ADMINISTRATOR	3	--	2	--	5
EXECUTIVE VP OR CORPORATE DIRECTOR	1	2	4	2	9
TECHNICAL EVALUATION COMMITTEE	7	5	--	--	12
DEPARTMENT HEAD	--	--	7	3	10
USERS	--	--	2	2	4
TIMESHARING COORDINATOR	--	--	2	5	7
OTHER	2	--	1	--	3

	<u>Number of Mentions</u>
- EDP management involved	30
- Technical evaluation committee	12
- Executive VP or Corporate Director involved	4
- Data base administrators involved	3

- NOMAD users and other RCS DBMS users reported a lower level of involvement by EDP personnel in the decision on selecting a vendor:

	<u>Number of Mentions</u>
- Department head	10
- Timesharing coordinator	7
- EDP management	6
- Executive VP or Corporate Director	6
- Users	4
- Data base administrators	2

## 2. METHOD OF SELECTING A DBMS

- Approximately 70% of in-house DBMS and potential in-house DBMS users reported evaluating several products on the market prior to selecting a DBMS, as shown in Exhibit IV-13. Whereas, only 30-35% of the RCS DBMS users went through a competitive evaluation cycle.
- Approximately 50% of NOMAD users and other RCS DBMS users stated they went to one vendor and did not look at competitive systems.
  - Many of these companies reported they were using other services on the RCS network and it was natural that they would stay with the same vendor.

## EXHIBIT IV-13

## METHOD OF SELECTING A DBMS

METHOD	IN-HOUSE DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS	NOMAD USERS	OTHER RCS DBMS USERS
EVALUATED SEVERAL PRODUCTS ON THE MARKET	65%	70%	35%	30%
WENT TO ONE VENDOR	20%	30%	55%	50%
PREVIOUSLY USED SYSTEM ON A NETWORK	10%	--	--	--
USER OF THE PRODUCT SELECTED	--	--	5%	20%
OTHER	--	--	5%	--
DON'T KNOW	5%	--	--	--

- A few companies stated they had a prior association with the RCS vendor at another company and selected the company on this basis.
  - Two of the in-house DBMS users (10%) selected the DBMS to bring in-house because they had used it on a network service. Both respondents were System 2000 users.
3. SELECTION PROCEDURES USED BY IN-HOUSE DBMS AND POTENTIAL DBMS USERS
- Selection procedures of DBMS products are presented in Exhibit IV-14.
  - Approximately 35% of current in-house DBMS users and 40% of potential DBMS users did or expected to install the DBMS on their own computer systems to test prior to making a commitment.
  - Very few companies, less than 15% of the total, required that the vendor provide them with benchmarks:
    - Several companies stated they would never trust the vendor's benchmarks.
  - The predominate method of selection was to conduct their own benchmarks as reported by 45% of the in-house users and 70% of the potential DBMS users.
    - Several respondents stated benchmarks were performed at other user sites or were performed on the vendor's computer.
  - Although only 25% of the current DBMS users and 20% of the potential DBMS relied solely on selecting the DBMS based on reviewing system documentation, it was still a critical factor in the selection process.

# EXHIBIT IV-14

## SELECTION PROCEDURES USED BY IN-HOUSE DBMS AND POTENTIAL DBMS USERS

SELECTION PROCEDURE	POTENTIAL DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS
<ul style="list-style-type: none"> <li>● INSTALL DBMS ON OWN COMPUTER TO TEST <ul style="list-style-type: none"> <li>- Yes 35%</li> <li>- No 45%</li> <li>- Don't Know 20%</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>40%</li> <li>60%</li> </ul>
<ul style="list-style-type: none"> <li>● BENCHMARKS PROVIDED BY VENDOR <ul style="list-style-type: none"> <li>- Yes 15%</li> <li>- No 70%</li> <li>- Don't Know 15%</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>10%</li> <li>90%</li> </ul>
<ul style="list-style-type: none"> <li>● BENCHMARKS CONDUCTED BY COMPANY <ul style="list-style-type: none"> <li>- Yes 45%</li> <li>- No 40%</li> <li>- Don't Know 15%</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>70%</li> <li>30%</li> </ul>
<ul style="list-style-type: none"> <li>● REVIEWED SYSTEM DOCUMENTATION <u>ONLY</u> <ul style="list-style-type: none"> <li>- Yes 25%</li> <li>- No 55%</li> <li>- Don't Know 20%</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>20%</li> <li>80%</li> </ul>



- If the system was not well documented or did not explain in detail the technical operational aspects of the system, it never got to the testing phase.
- And as one respondent succinctly stated: "We did not want vendors coming in. We obtained the documentation and wanted it to stand on its own during the evaluation cycle."

#### 4. OTHER DBMS CONSIDERED DURING THE SELECTION PROCESS BY IN-HOUSE DBMS AND POTENTIAL DBMS USERS

- The most frequently mentioned DBMS product considered during the selection cycle by in-house and potential DBMS users was IMS or DL/I, receiving 20 mentions by the 30 respondents. (See Exhibit IV-15.)
- TOTAL was the second most frequently mentioned package by 12 respondents.
- ADABAS, System 2000 and IDMS placed third, receiving six to eight mentions by respondents.

### D. MARKETING CONSIDERATIONS

#### I. REQUIRED SALES CALLS

- Ten of the in-house DBMS users and three of the potential DBMS users could give approximates on the number of sales calls the vendor made prior to selecting a package.
- Although ten of the in-house DBMS users responded to this question, the average is based on eight responses. The range of their response was one to twenty visits which made it too difficult to average. Therefore, the high and low numbers were removed.

## EXHIBIT IV-15

## OTHER DBMS CONSIDERED DURING THE SELECTION PROCESS

DBMS NAME	IN-HOUSE DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS	TOTAL NO. OF MENTIONS
IMS/DLI	11	9	20
TOTAL	7	5	12
ADABAS	5	3	8
SYSTEM 2000	5	1	6
IDMS	4	2	6
MODEL 204	3	--	3
DATAKOM DB	--	1	1
RAMIS	1	--	1
OS 200	--	1	1
CICS	1	--	1
UCC 10	--	1	1

- As shown in Exhibit IV-16, the average number reported by in-house DBMS users was five and the potential DBMS users anticipated it would take four sales calls.

## 2. TIME TO CLOSE

- The average number of months spent by in-house DBMS users and potential DBMS users in selecting a DBMS was seven to nine months as shown in Exhibit IV-16.
- This exhibit also presents the number of months the DBMS was installed before it was formally accepted and whether or not the company required the vendor to give a formal presentation of the products capabilities.
- Only nine (30%) of the in-house or potential in-house DBMS users had or planned to install the DBMS on their systems to test before final acceptance. This acceptance test period ranged from one to three months.
  - Eleven of the respondents (37%) stated that formal acceptance testing was not done or planned.
  - Ten respondents (33%) didn't know whether acceptance testing was done or whether it would be done.
- Formal presentations to EDP department personnel were required by ten (50%) of the in-house DBMS users and six (60%) of the potential DBMS users.
  - Only five of the in-house or potential DBMS users required that a presentation be given to both EDP personnel and upper management.
- Few responses were received from NOMAD and other RCS DBMS users on the issues of sales calls and length of time to close a sale to make any analysis worthwhile.

## EXHIBIT IV-16

## MARKETING CONSIDERATIONS

FACTOR	IN-HOUSE DBMS USERS	POTENTIAL DBMS IN-HOUSE USERS
AVERAGE NUMBER OF VISITS MADE BY THE SALESMAN	5 VISITS (8)	4 VISITS (3)
AVERAGE NUMBER OF MONTHS TO SELECT A DBMS	7 MONTHS (14)	9 MONTHS (8)
NUMBER OF MONTHS UNTIL THE DBMS WAS FORMALLY ACCEPTED	1-3 MONTHS	1-3 MONTHS
- Wasn't Done/Don't Plan To Do	6	5
- Don't Know If It Was/ Will Be Done	7	3
PRESENTATION BY VENDOR TO:		
- EDP Personnel	10	6
- EDP & Upper Management	3	1
- Upper Management		1
- Not Required	2	1
- Don't Know	5	1

( ) NUMBER OF RESPONSES

- The diverse nature of this group, as explained in the introduction, made these questions "not applicable" for many of the RCS users.

### 3. CURRENT METHOD OF PAYMENT FOR DBMS

- Exhibit IV-17 presents the current method or planned method of payment for DBMS products of in-house and potential in-house DBMS users:
  - The predominate method of payment by current in-house users was purchase (50% of the respondents).
  - Buying a DBMS on a lease/purchase plan was cited as the planned method of acquisition by 40% of the potential DBMS users.
  - Leasing a DBMS was almost evenly divided among respondents: 35% and 30%.
  - Renting a DBMS was only cited by two companies: one in-house and one potential DBMS user.
- The companies who have purchased a DBMS quoted purchase prices ranging from \$13,000 to \$132,000. Taking a normal average of this data would result in an average price of \$45,000 per DBMS including options.
- However, if the high and low prices are removed, the average price of a DBMS would be \$81,000.
- Companies who were leasing a DBMS stated monthly lease costs of \$1,350 to \$9,000 a month with an average lease cost of \$3,100 per month.
  - It must be noted that the company paying \$9,000 a month was also leasing the operating system in addition to the DBMS and therefore cannot be considered in the average.



## EXHIBIT IV-17

CURRENT METHOD OR PLANNED METHOD  
OF PAYMENT FOR IN-HOUSE DBMS PRODUCTS

METHOD OF PAYMENT	IN-HOUSE DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS
PURCHASE	50% (10)	10% (1)
LEASE	35% (7)	30% (3)
LEASE/PURCHASE PLAN	10% (2)	40% (4)
RENT	5% (1)	10% (1)
DON'T KNOW	--	10% (1)

( ) NUMBER OF RESPONSES

#### 4. PREFERRED METHOD OF PAYMENT FOR SOFTWARE PRODUCTS

- Exhibit IV-18 presents the responses of all users on how they prefer to pay for software products.
- The predominate method of payment was purchase with 35% of all responses.
- Leasing received the second highest rating among users with 27% stating this was the preferred method.
  - Many respondents believed leasing provided them with a more flexible arrangement due to changes in software technology and that the lease could also be used as a "club if a company got into trouble with a vendor."
- Thirteen percent of users preferred a lease/purchase plan for software products and stated they preferred to use it for five to six months before committing to purchasing.
- Renting a DBMS was the least preferred method of acquisition.
- Many companies (22%) didn't know or didn't care how the company acquired software products and generally felt it was a decision for the accountants.

#### 5. MAINTENANCE

- Following is the method of payment for maintenance cited by current in-house DBMS users:

## EXHIBIT IV-18

## PREFERRED METHOD OF PAYMENT FOR SOFTWARE PRODUCTS

PURCHASE METHOD	IN-HOUSE DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS	NOMAD USERS	OTHER RCS DBMS USERS	AVERAGE OF ALL RESPONSES
PURCHASE	40% (8)	20% (2)	40% (8)	30% (3)	35% (21)
LEASE	30% (6)	30% (3)	15% (3)	40% (4)	27% (16)
LEASE/PURCHASE	15% (3)	40% (4)	5% (1)	--	13% (8)
RENT	--	10% (1)	5% (1)	--	3% (2)
DON'T CARE/ DON'T KNOW	15% (3)	--	35% (7)	30% (3)	22% (13)

( ) NUMBER OF RESPONSES

<u>Method of Payment</u>	<u>Number of Respondents</u>	<u>Percentage</u>
Fixed Annual Fee	9	45%
Included In Lease	6	30
As A Percent Of Package Cost	2	10
As Needed	1	5
Don't Know	2	10

- The fixed annual fees cited by respondents ranged from \$2,000 a year to \$6,000.
  - Maintenance appears to be a negotiable item during sales closure:
    - Two respondents (IDMS, System 2000) stated their contracts were negotiated so that they did not have to pay any maintenance fee if the products were not enhanced during the year.
    - Four of the System 2000 users reported paying fixed annual fees for maintenance and all four quoted different expenditures: \$5,000, \$3,500, \$2,400, and \$2,000.
- Exhibit IV-19 shows the preferred method of payment for maintenance by all respondents:
  - The preferred method of payment for maintenance by all respondents was as a fixed annual fee (30%).
  - Payment for maintenance on an as needed basis received the next highest rating (17%).
  - The least desirable method was as a percent of the purchase price.

## EXHIBIT IV-19

## PREFERRED METHOD OF PAYMENT FOR MAINTENANCE

METHOD OF PAYMENT	IN-HOUSE DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS	NOMAD USERS	OTHER RCS DBMS USERS	AVERAGE OF ALL RESPONSES
FIXED ANNUAL FEE	35% (7)	50% (5)	20% (4)	20% (2)	30% (12)
PERCENT OF PURCHASE	15% (3)	--	15% (3)	10% (1)	11% (7)
AS NEEDED	30% (6)	20% (2)	10% (2)	--	17% (10)
INCLUDE IN LEASE/RENT	--	30% (3)	15% (3)	30% (3)	15% (9)
DON'T CARE/ DON'T KNOW	20% (4)	--	40% (8)	40% (4)	27% (16)

( ) NUMBER OF RESPONSES



## 6. IMPORTANT FACTORS WHEN SELECTING SOFTWARE PRODUCTS

- Exhibit IV-20 presents the ratings received from the four user groups on the importance of certain factors when selecting software products:
  - Not surprisingly, technical capabilities received the highest rating of all factors.
  - Vendor support, maintenance/upgrading of the product, and reputation of the vendor also received very high ratings.
  - Of average importance were references from other users, price, and number of other installations.
  - Lower ratings were given to vendor size and established user groups.
  - The least important factor was location of the vendor.

## 7. IMPORTANT ATTRIBUTES OF SOFTWARE SALESMEN

- The most important attributes of software salesmen cited by users were:

<u>Attributes</u>	<u>Number of Mentions</u>
Technical knowledge of the product	33
Honesty/integrity	19
Ability to relate users' applications to the product	12
Ability to communicate on a technical and user level	9

- Following are some comments provided by users:

## EXHIBIT IV-20

## IMPORTANT FACTORS WHEN SELECTING SOFTWARE PRODUCTS

FACTOR	IN-HOUSE DBMS USERS	POTENTIAL IN-HOUSE DBMS USERS	NOMAD USERS	OTHER RCS DBMS USERS	AVERAGE OF ALL RESPONSES
TECHNICAL CAPABILITIES	4.8 (20)	4.6 (10)	4.4 (13)	4.5 (6)	4.7 (49)
VENDOR SUPPORT	4.4 (20)	4.4 (10)	4.1 (13)	4.1 (6)	4.4 (49)
MAINTENANCE/ UPGRADING	4.1 (20)	3.8 (10)	4.0 (13)	4.2 (6)	4.1 (49)
REPUTATION OF VENDOR	3.9 (20)	4.0 (10)	3.8 (13)	4.3 (6)	4.0 (49)
REFERENCES FROM OTHER USERS	4.1 (20)	3.8 (10)	3.4 (13)	4.0 (6)	3.8 (49)
PRICE	3.5 (20)	3.4 (10)	2.9 (13)	3.8 (6)	3.4 (49)
NO. OF OTHER INSTALLATIONS	3.1 (20)	3.0 (10)	2.9 (13)	3.2 (6)	3.1 (49)
SIZE OF VENDOR	2.8 (20)	2.7 (10)	3.0 (13)	2.3 (6)	2.8 (49)
ESTABLISHED USER GROUP	2.9 (20)	2.3 (10)	2.4 (13)	2.3 (6)	2.6 (49)
VENDOR LOCATION	2.2 (20)	2.3 (10)	2.6 (13)	2.2 (6)	2.4 (49)

SCALE: 5 = HIGHLY IMPORTANT  
1 = LEAST IMPORTANT

( ) NUMBER OF RESPONSES

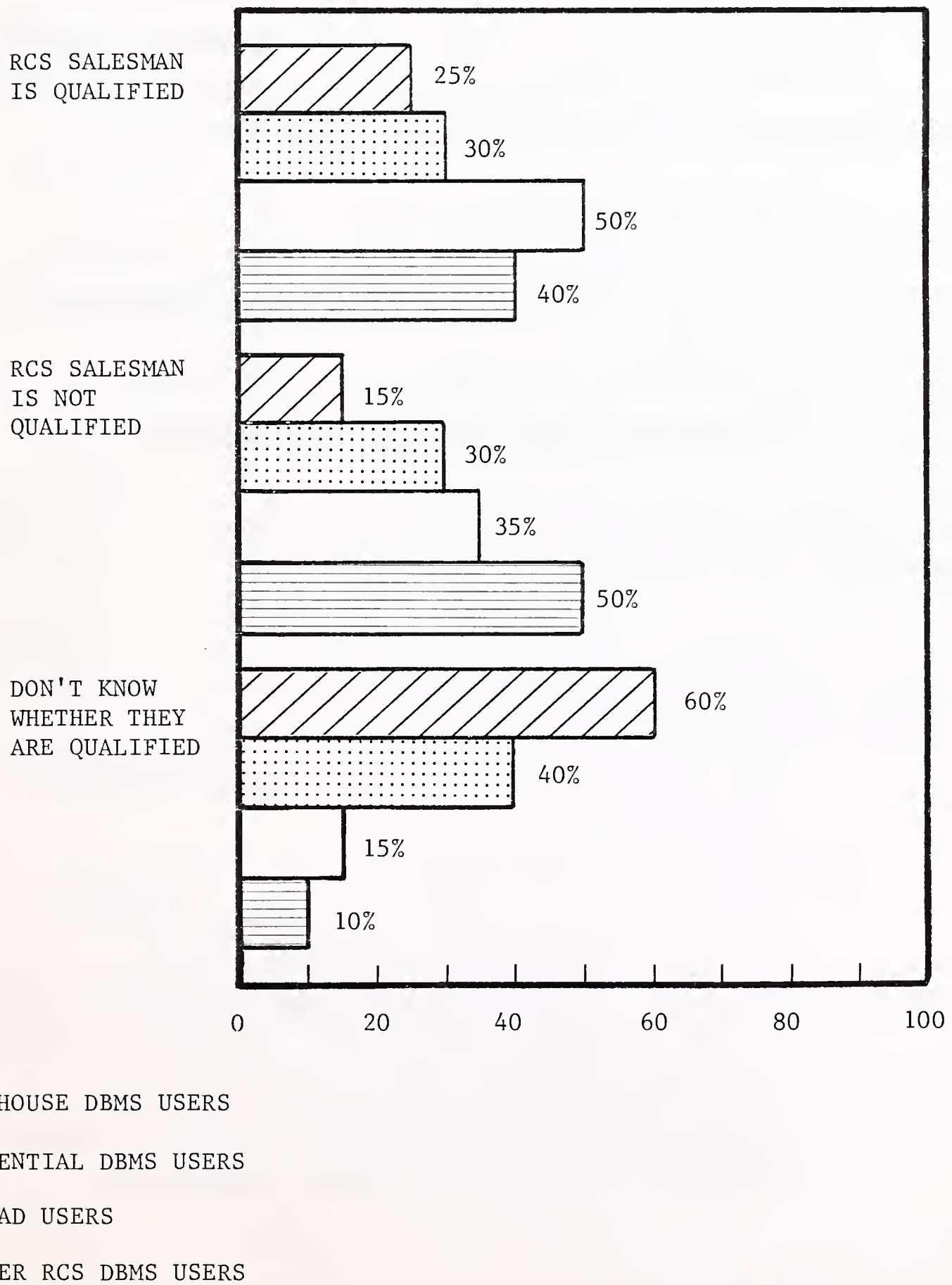
- "The salesman should be more of a technician. Too many come in with a canned speech and can't answer technical questions."
- "He must be able to discuss intelligently the DBMS on technical terms. He should know everything but the very, very technical details."
- "Having technical knowledge without sounding like he has it. I don't like glad-hand happy jacks. I like the rare bird who knows everything about the system and can explain it to my mother."
- "Honesty. Present the good points and the pitfalls of the product. Give the customers a warning that DBMS is not a panacea and that it may not be what they need."
- "Totally honest and be capable of communicating with non-technical people."
- "Know their product and know the business as it relates to the product."
- "Honesty, know their product well. Software is a highly technical business and the salesman should have a technical background."

#### 8. ABILITY OF RCS SALESMEN TO SELL SOFTWARE PACKAGES

- Exhibit IV-21 presents respondent attitudes on whether RCS salesmen are also capable of selling software products.
- Sixty percent of the in-house DBMS users and 40% of potential DBMS users could not comment on this question because of a lack of exposure to RCS salesmen.
- Those who could comment were almost evenly divided on their opinion of whether or not they were capable.

# EXHIBIT IV-21

## ABILITY OF RCS SALESMEN TO SELL SOFTWARE PACKAGES



- Fifty percent of the NOMAD users believed the RCS salesman was capable versus 40% of the other RCS DBMS users.
- Other RCS DBMS users rated the ability of RCS salesmen to sell software packages the lowest of the four groups interviewed. Fifty percent stated they were not capable.
- Although the reaction to whether the RCS salesmen were capable of selling products received a fairly positive response from about 50% of the RCS DBMS users, many qualified their response by stating:
  - Some are qualified, some are not.
  - Depends on the salesman and whether they will take the time to learn the product,
  - Or simply that they had not noticed any differences.
- Comments received from respondents on the subject of RCS salesman capabilities.
  - "Depends on the individual. Haven't noticed any difference. RCS salesman may be more capable in fact."
  - "The salesman is average. I think most RCS salesmen are capable of selling products."
  - "Timesharing salesmen don't know what they are talking about. They don't have technical depth. Doubtful whether they can sell packages." (Respondent formerly worked for Boeing Computer Services.)
  - "I've had relatively little to do with the RCS salesman. I've had more contact with the technical representative and he is imminently capable. The salesman would need more technical background."



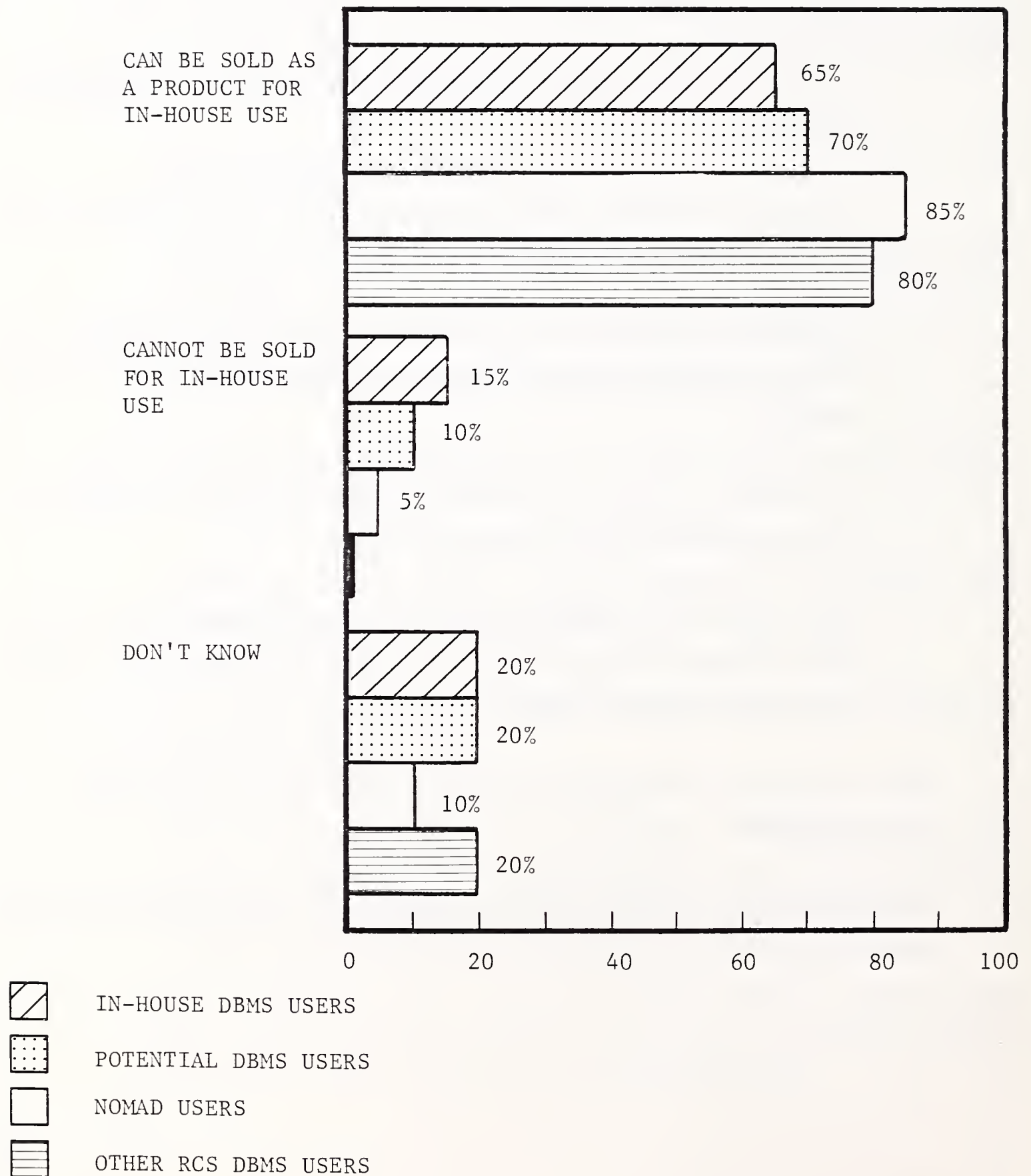
- "Best salesman NCSS has are the ones who used to be tech reps."
- "RCS salesmen are not technically competent." (Respondent formerly worked for ADP.)
- "We used to use NCSS. They don't have the technical expertise to sell to the EDP department. Salesmen always bring technical representatives with them."
- "I don't make much distinction between them. They are comparable in capabilities."
- "Timesharing salesmen don't know their products. They have too many to learn, to learn any one well."
- "Timesharing salesmen are no different. Most software salesmen are basically salesmen and don't know that much about the technical aspects."
- "It's easier to work with someone selling services than a product. Product salesmen sell and leave the service."
- "Don't think RCS salesmen can sell to EDP personnel. They tend to deal in concepts and can't relate the product to user needs. (Respondent formerly worked for SBC.)

## 9. USER ATTITUDES TOWARDS BUYING SOFTWARE PRODUCTS FROM AN RCS VENDOR

- Attitudes towards purchasing a DBMS product from an RCS vendor were very positive from all four of the groups surveyed (see Exhibit IV-22).

# EXHIBIT IV-22

## USER'S ATTITUDE TOWARDS BUYING SOFTWARE PRODUCTS FROM AN RCS VENDOR



- Sixty-five percent of current in-house DBMS and 70% of the potential DBMS users stated they would not have any objections towards buying a DBMS product from an RCS vendor.
- Eighty-five percent of the NOMAD users and 80% of other DBMS users felt RCS developed DBMS products could definitely be sold to in-house users.
- The few users who felt that RCS developed DBMS products could not be sold to in-house users cited the following reasons:
  - . Don't like to buy outside products from services companies.
  - . Don't plan on buying another DBMS.
- Some comments from RCS DBMS users:
  - "NOMAD is good for random reporting and small files (not more than one disk pack). Real emphasis is on reporting and update. If price was competitive it could beat RAMIS out every time."
  - "Companies may be less nervous about buying from a large timesharing company rather than buying from a small software company."
  - "RCS package is very flexible. Good for both technical and non-technical staff."
  - "It would be beneficial for RCS companies to sell their products."
  - "NCSS will probably be more successful selling it on a mini as opposed to selling it as an in-house product."

- "Wouldn't buy NOMAD because it doesn't have integrated communications capability. Can't see that it would do more than IMS or TOTAL. It would have to be a drastically superior product."
- "Timesharing vendors have a better background in interactive use. They have seen the advantages and disadvantages of how users implement systems and thus are probably more knowledgeable."
- "RCS companies can't supply it worldwide. We try to standardize on our software at all international locations."

#### 10. COMPARISON OF RCS DBMS PRODUCTS VERSUS OTHER DBMS PRODUCTS

- Twenty-nine of the 30 in-house DBMS users and potential in-house users stated they were not aware of RCS DBMS products in order to make a judgement on their technical capabilities.
  - The one in-house DBMS user who could comment, made the following statement: "I'm not that familiar with them but hearsay from other DP types is that they are not as powerful."
- Responses from NOMAD users and other RCS DBMS users on whether there were any limitations of RCS DBMS products which would not make them competitive with other DBMS were:

##### - NOMAD USERS

• Aware of limitations	45%
• Not aware of any limitations	20%
• Don't know enough to comment	35%

- OTHER RCS DBMS USERS

- |                                |     |
|--------------------------------|-----|
| . Aware of limitations         | 40% |
| . Not aware of any limitations | 10% |
| . Don't know enough to comment | 50% |

● The two major limitations of RCS developed DBMS products were:

- Poor performance when running large batch, production systems.
- Limited to handling small files.

● Following are some comments received from users on limitations of RCS DBMS products:

- "Not good for production, batch runs. Interpreter is too slow. It should run in compiled code for large jobs. Most RCS developed products have not been carefully thought out. Some don't have sufficient depth in the language to handle a lot of things. NCSS or any other timesharing vendor may not be able to react fast enough to changes made by IBM in the operating system." (NOMAD user)
- "File size they can handle is very restrictive." (NOMAD user)
- "NOMAD can't handle large complex files efficiently. Some RCS DBMS products don't have secondary indexing." (NOMAD user)
- "Not sure NOMAD has programming language interfaces (COBOL, FORTRAN)." (NOMAD user)
- "NOMAD runs primarily in interactive mode. May be a problem for companies who have a lot of batch systems." (NOMAD user)
- "Don't think NOMAD can handle large data bases. It would probably choke on one billion bytes. I don't think their indexing procedures are handled very well." (NOMAD user)



- "Resource usage must be optimized." (NOMAD user)
- "Its not the same. It's a junior partner t our current in-house system - IMS." (NOMAD user)
- "Compatability with operating system may cause problems. Not sure the timesharing DBMS can handle large production runs. Overhead could be excessive - too much has been built in them to make them easy for users that they may not be efficient." (MAGNUM user)
- "They are generally report writers." (COMPOSITE user)
- "Size limitations - they can't handle large files. Less powerful than IMS. MAGNUM has fewer advanced features. Not on the leading edge technically." (MAGNUM user)
- "Are usually available on wider range of operating systems." (IPL user)

## II. OEM ASSOCIATION

- The aspect of whether it would be more attractive to buyers for a plug compatible mainframe vendor to offer a DBMS with their hardware was not considered a key selling point by most users.
- Although 50% of the in-house DBMS users and potential DBMS users thought it might be attractive to buyers. The other 50% felt it would not be an important issue for the following reasons:
  - Companies buy PCMs for price/performance and not software.
  - As long as IBM's software was compatible it would not be a major concern.

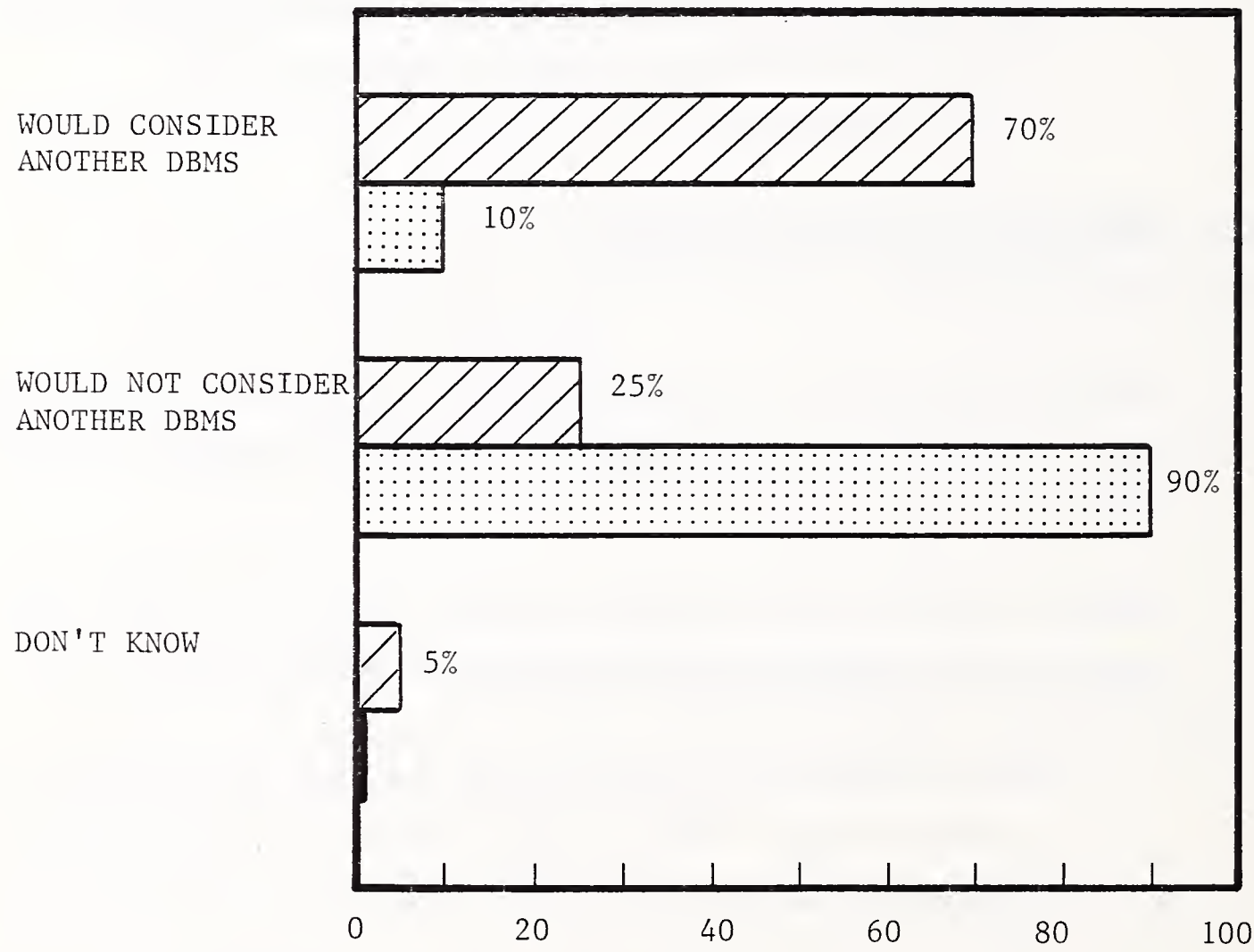
- There are enough other IBM compatible products on the market from which a company could select.
- Decision to buy a PCM is a hardware decision, not a software decision.
- RCS DBMS users were even less attracted to this possibility than in-house or potential DBMS users.
- Only 20% of NOMAD users and 30% of the other RCS DBMS users thought the PCM offering a DBMS would enhance sales.



#### E. DBMS SALES TO IN-HOUSE USERS

- Exhibit IV-23 reflects the responses received when current in-house DBMS and potential DBMS users were asked if they would consider another DBMS product.
- Seventy percent of the current in-house DBMS users stated they would consider another DBMS versus only 10% of the potential DBMS users.
- Potential DBMS users were less than enthusiastic about the possibilities of adding another DBMS, mainly because they believed one DBMS product would satisfy their requirements.
- The size of the company appears to be a direct correlation as to whether a company would consider buying an additional DBMS. Following is a size breakdown of the 20 in-house DBMS users who stated they would or would not consider another DBMS:

EXHIBIT IV-23

ATTITUDE OF IN-HOUSE DBMS AND POTENTIAL  
DBMS USERS ON ADDING ANOTHER DBMS



 IN-HOUSE DBMS USERS  
 POTENTIAL IN-HOUSE DBMS USERS

- Would consider:

<u>Annual Sales</u>	<u>No. Of Companies</u>
\$400 Million to \$30 Billion	11
\$130 Million to \$180 Million	3

- Would not consider:

<u>Annual Sales</u>	<u>No. Of Companies</u>
Over \$2 Million	1
\$200-600 Million	5

- The one potential DBMS user who stated it would consider buying another DBMS had annual revenues of \$700 million. The nine companies who stated they would not consider buying another DBMS had annual sales of \$30 million to \$500 million.

## F. MIGRATION OF CURRENT RCS DBMS USERS TO IN-HOUSE USE

### I. CURRENT EXPENDITURES BY RCS DBMS USERS

- Monthly expenditures reported by 14 NOMAD users ranged from \$50 to \$37,500 for DBMS services. The average expenditure for NOMAD users was \$2,000 per month.
- The other RCS DBMS users reported expenditures ranging from \$300 to \$12,500 per month (six respondents) with an overall average expenditure of \$2,100 per month.

- When asked at what expenditures level it would make it cost effective to bring the RCS product in-house, only ten companies could provide an exact dollar amount.
  - These monthly expenditures ranged from \$2,000 to \$15,000 with an average of \$8,200 per month.
- 2. CONDITIONS UNDER WHICH RCS USERS WOULD BRING THE DBMS PRODUCT IN-HOUSE
  - Four NOMAD users out of the 20 respondents reported they had looked at the possibility of bringing NOMAD in-house but could not because of the incompatibility with the operating system.
  - Two companies out of ten respondents from other RCS DBMS users (FOCUS and IPL users) stated they were planning on bringing the product in-house.
  - Although cost of the RCS service was an important factor in determining whether to bring the product in-house, several respondents reported they could not do this because of their requirements for a national network or interactive timesharing capabilities.
  - Characteristics of the RCS DBMS users interviewed were as follows:
    - Twenty NOMAD users:
      - Five respondents stated they did not have any in-house computers or not any at that particular site.
      - Ten stated they already had a DBMS in-house and were either planning to: 1) convert applications to their in-house system (5 responses); 2) seriously considering the NCSS mini offering (2 respondents); 3) need network or timesharing capabilities and wouldn't consider terminating the RCS relationship (3 responses).



- Four stated they did not have an in-house DBMS and were using NOMAD for very specialized applications.
  - One respondent stated they were previous users of NOMAD and in now considering installing IMS.
- Ten other RCS DBMS users:
  - Four respondents stated they did not have any computers or not any at that site.
  - Six stated they had in-house DBMSs and were planning to: 1) convert to their in-house system (3 respondents); 2) bring product in-house (1 respondent); 3) looking at ADP's mini offering (1 respondent); 4) need network capability (1 respondent).
- Based on these results, it would appear that the five of the twenty NOMAD respondents who were planning to convert applications to their in-house DBMS would be potential migration candidates.
  - However, INPUT believes that little conversion will actually take place. The users are more likely to continue current applications use externally and put new applications in the internal DBMS.
  - There are certain exceptions to this, particularly when users wish to expand the current NOMAD applications to work more closely with in-house files.
- Another consideration is that the respondents considering migration tend to be among the larger users of NOMAD. An easier migration path could therefore impact NCSS revenues significantly.

- The proportion of RCS DBMS users "planning" to convert in-house appears constant over NOMAD and other users. Instead of "planning," a better term to describe this effort might be "intending." Indeed several respondents indicated that any such conversion was fairly far in the future; at least six months and probably two years or more.

## APPENDIX A: COMPANIES INTERVIEWED



## APPENDIX A: COMPANIES INTERVIEWED

A & M RECORDS  
Project Manager

ABBOTT LABORATORIES  
Manager, Research Computing And Advanced Technology

AETNA INSURANCE  
Market Research Systems Administrator

AETNA INSURANCE  
Timesharing Coordinator

AMERICAN CYNAMID  
Data Administrator

AMERICAN ELECTRIC POWER SERVICE COMPANY  
Data Administrator

AMERICAN GAS ASSOCIATION  
Manager Of Computer Services

AMERICAN NATIONAL BANK & TRUST  
Vice President, Programming & Systems

AMERICAN NATURAL SERVICE COMPANY  
Timesharing Manager

ANGELICA UNIFORM COMPANY  
Manager Systems & Data Base Administration

BASSETT FURNITURE INDUSTRIES  
Manager, Data Processing

BECHTEL POWER CORPORATION  
Senior Engineering Programmer



BYRON JACKSON PUMP DIVISION  
Manager, Systems Control

CHEMICAL BANK  
Vice President, Data Processing

CHEESEBOROUGH PONDS  
Manager, Marketing Planning & Analysis

CINNCINNATI GAS & ELECTRIC  
Manager Systems & Methods

COMMERCIAL UNION INSURANCE  
Manager, Data Base Systems

CORNING GLASS  
Systems Programmer

DAN RIVER  
Software Manager

DAYTON HUDSON CORPORATION  
Area Research Analysts

ECODYNE CORPORATION, GRAVER WATER DIVISION  
Group Leader, R&D

EL PASO NATURAL GAS COMPANY  
Manager, Systems & Computers

FEDERAL MOGUL CORPORATION  
Data Base Manager

FIRST MERIDIAN FINANCIAL CORPORATION  
Programmer

FIRST NATIONAL BANK OF COLUMBUS  
Assistant Vice President, Data Processing

FIRST NATIONAL BANK OF APPLETON  
Vice President/Controller

FLYING TIGER  
Senior Marketing Analyst

FOOD HANLERS  
Manager, Transportation Systems

FORD MOTOR COMPANY  
Principal Design Engineer

GENERAL BINDING CORPORATION  
Data Center Manager

GENERAL MOTORS  
Systems Analyst

GETTY OIL  
Litigation Support Manager  
(Former Data Base Administrator)

GULF OIL COMPANY  
Supervisor, Management Sciences Group

GULF STATES UTILITIES COMPANY  
Director, Implementation Services

HARTFORD INSURANCE  
Corporate Timesharing Coordinator

HOOVER COMPANY  
Systems Project Supervisor

ILLINOIS CENTRAL GULF RAILROAD  
Data Base Administrator

LITHONIA LIGHTING COMPANY  
Operations Supervisor

MASSACHUSETTS BAR ASSOCIATION  
Director of Membership Records And Data Processing

MATTEL  
Data Center Manager

MEDICAL SERVICE BUREAU OF IDAHO  
Systems Programmer

MICHIGAN STATE HOUSING DEVELOPMENT AGENCY  
Data Systems Analyst

PACKARD INSTRUMENTS  
Data Processing Manager

J. C. PENNEY'S  
Timesharing Coordinator

J. C. PENNEY CASUALTY INSURANCE  
Vice President

PUBLIC SERVICE, Plainfield, Indiana  
Data Base Coordinator

RICHARDSON & MERRILL  
Staff Consultant

ROCHESTER TELEPHONE COMPANY  
Timesharing Coordinator

SARGENT WELCH  
Director Of MIS

SCHLEUMBERGER  
Data Processing Coordinator

SOUTHERN BELL TELEPHONE & TELEGRAPH  
Systems Analyst

SOUTHERN NEW ENGLAND TELEPHONE  
Staff Assistant

STATE ACCIDENT INSURANCE FUND  
Data Base Administrator

TELEX COMPUTER PRODUCTS  
Manager, Applications Software

TEXAS POWER & LIGHT  
Systems/Programs Supervisor

U.S. AIR FORCE, RECRUITING SERVICES  
Market Systems Analyst

UNION CARBIDE CORPORATION  
Manager, Scientific Applications And Timesharing Services

UNITED AIRLINES  
Charter Reservation Planner

UNITED TECHNOLOGIES  
Manager, Financial Information Systems

VALLEY NATIONAL BANK  
Methods Engineering Analyst

## APPENDIX B: QUESTIONNAIRES





## IN-HOUSE DBMS USERS

1. a) Name of in-house DBMS installed \_\_\_\_\_  
b) Year DBMS was installed \_\_\_\_\_

2. Does your EDP department or any other department in your company also use a DBMS on a remote computing network?

☐ Yes

☐ No

- a) If yes: Name of RCS Vendor \_\_\_\_\_

Name of DBMS \_\_\_\_\_

Year DBMS service began \_\_\_\_\_

- 1) Why are you also using a DBMS on an RCS network?

---

---

---

- 2) Is the RCS DBMS usage temporary?

☐ Yes

☐ No

Why? \_\_\_\_\_

---

---

3. How did you select your in-house DBMS?

- ☐ a) Evaluated several products on the market. List names:

---

---

---

- ☐ b) Went to one vendor. Why? 

---

---

- ☐ c) Issued an RFP.

- ☐ d) Other 

---

4. Who was involved in the final decision on selection? (check all that apply)

- ☐ a) EDP Manager, Director of MIS, VP of DP

- ☐ b) Data base administrator

- ☐ c) Other executive VP or Corporate Director

- ☐ d) Technical Evaluation Committee

- ☐ e) Users

- ☐ f) Other (specify) 

---

---

5. When you acquired your DBMS, what was involved in the buying cycle?

- a) Number of visits made by the salesman (try to obtain approximates) 

---

- b) Number of weeks/months from when the decision was made to start evaluating products until the time of selection 

---

c) Number of weeks from the time the DBMS was installed until the product was formally accepted \_\_\_\_\_

d) Did you also require the DBMS vendor to give a presentation of the capabilities of the product to members of the EDP department or upper management as part of the selection process?

☐ EDP Department Personnel      ☐ Upper Management  
☐ Both

6. During the technical evaluation cycle, did you:

a) Install the DBMS package on your own computer to test?

☐ Yes                      ☐ No

b) Require that the vendor provide you with benchmarks?

☐ Yes                      ☐ No

c) Conduct your own benchmarks?

☐ Yes                      ☐ No

d) Review system documentation only?

☐ Yes                      ☐ No

e) Other (Specify) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. How would you evaluate your DBMS in terms of (obtain evaluation for in-house DBMS and RCS DBMS if respondent has both):

Strengths \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Weaknesses \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8. Please rate your level of satisfaction of your DBMS in terms of (5 = highly satisfied, 1 = dissatisfied):

- a) Technical capabilities (Does it perform as specified?) \_\_\_\_\_
- b) Documentation \_\_\_\_\_
- c) Ease of use for programmers \_\_\_\_\_
- Ease of use for non-technical staff \_\_\_\_\_
- d) Vendor technical support \_\_\_\_\_
- e) Vendor response to user suggestions for improvement \_\_\_\_\_

9. Please rate the importance of the following DBMS features (Scale: 5 = highly important, 1 = least important)

FEATURE	RATING	CHECK 3 or 4 MOST CRITICAL COMPONENTS
a) Data Dictionary		
b) Report Writer		
c) Query Language		
d) Data Manipulation Language		
e) Communications Interface		
f) Interfaces to Other DBMS Files (Specify_____)		
g) Host Language Interface (Specify_____)		
h) Other Features (Specify_____)		

10. What improvements do you think should be made to:

a) In-house DBMS products? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

b) RCS DBMS products (if known)? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

11. Of the following technical requirements, which ones do you require in a DBMS product?

a) Procedural compilation capabilities

☐ Yes

☐ No

b) Multiple concurrent updates

☐ Yes

☐ No

c) Variable length file support

☐ Yes

☐ No

d) Minimum file size DBMS should support \_\_\_\_\_

e) Other technical requirements \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



12. What is the percentage of total use of your DBMS

\_\_\_\_\_ % used by technical staff (EDP department personnel)

\_\_\_\_\_ % used by non-technical staff

13. Do you expect this percentage of DBMS use to change in the next five (5) years?

☐ Yes

☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

14. How did you/are you paying for your DBMS?

☐ a) Purchased

1) Total price including options \$ \_\_\_\_\_

☐ b) Leased

1) Monthly lease price \$ \_\_\_\_\_

2) Length of lease \_\_\_\_\_

☐ c) Rent

1) Monthly expenditure \$ \_\_\_\_\_

15. Is (purchase, lease, rent) the preferred method of payment for software products in your company?

☐ Yes

☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_

16. How do you pay for maintenance?

- ☐ a) Fixed annual fee \$ \_\_\_\_\_
- ☐ b) Percent (%) of purchase price \_\_\_\_\_ Per Year
- ☐ c) Included in lease

17. Do you prefer to pay for maintenance as:

- ☐ a) A fixed annual fee
- ☐ b) A percent of the cost of the total package
- ☐ c) As needed
- ☐ d) Included in lease

18. How much technical support from your vendor did you need during the first year your DBMS was installed versus your current requirements?

TECHNICAL SUPPORT	FIRST YEAR	CURRENT
Hours		
o Per week		
o Per month		
Performed		
o On-site		
o Telephone		
o Both		
Other Support Required		
_____		
_____		
_____		
_____		

19. What is the average training requirement of your DBMS product?

\_\_\_\_\_ Number of class days required for programmers

\_\_\_\_\_ Number of months before programmer is proficient in  
using the DBMS

\_\_\_\_\_ Number of training days required for users (Learn enough  
to get meaningful results)

20. Does your company also use RCS services?

☐ Yes

☐ No

a) If yes, do you know the RCS salesman ☐ Yes ☐ No

1) If yes, do you think the RCS salesman is capable of  
selling you a DBMS?

☐ Yes

☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b) If no, what is your general opinion of the quality/image of  
RCS salesman versus a DBMS salesman?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

21. What do you think are the most important attributes of a software  
salesman?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

22. Please rate the importance of the following factors when selecting a software product (Scale: 5 = high, 1 = low)

FACTOR	RATING	RATING OF '5's'
a) Technical Capabilities of Product		
b) Vendor Size		
c) Vendor Support		
d) Vendor Location		
e) Vendor Reputation		
f) Number of Other Installations		
g) Maintenance/Upgrading of the Products		
h) Price		
i) Established User Group		
j) References from Other Users		
k) Other_____		

23. Would you consider purchasing another DBMS product?

☐ Yes

☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

a) If yes, would this:

- ☐ Replace your current DBMS
- ☐ Be in addition to your current DBMS

24. Would you consider or have you considered purchasing a DBMS product developed by an RCS vendor?

- ☐ Yes ☐ No

Why? \_\_\_\_\_

25. Are you aware of any limitations of RCS developed DBMS products which would not make them competitive with other products such as IMS, ADABAS, System 2000, etc. for in-house use?

- ☐ Yes ☐ No

Comments \_\_\_\_\_

26. Have you ever been approached by a Plug compatible mainframe vendor?

- ☐ Yes ☐ No

27. Have you purchased or leased a PCM?

- ☐ Yes ☐ No

28. Do you think the availability of a DBMS product on the PCM would make the PCM more attractive to buyers?

- ☐ Yes ☐ No

Why? \_\_\_\_\_



### RCS DBMS Users

1. Name of RCS DBMS used: \_\_\_\_\_

Name of RCS Vendor: \_\_\_\_\_

Year DBMS service began: \_\_\_\_\_

2. Do you also have an in-house DBMS?

☐ Yes      ☐ No

a. If yes, name of DBMS vendor: \_\_\_\_\_

Name of DBMS: \_\_\_\_\_

Year DBMS was installed: \_\_\_\_\_

1) Why are you also using a DBMS service on an RCS service?

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2) Is the RCS DBMS usage temporary?

☐ Yes      ☐ No

Why? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. How did you select your RCS DBMS?

- ☐ Evaluated/received competitive bids from several RCS vendors
- ☐ Learned of the product through a seminar
- ☐ Reference from another user of the product
- ☐ User of the product selected, don't know how the decision was made
- ☐ Went to one vendor  
Why? \_\_\_\_\_
- ☐ Other: \_\_\_\_\_  
\_\_\_\_\_

4. Who was involved in the final decision on selection?  
(Check all that apply)

- ☐ EDP Manager, Corp. Dir. of MIS, VP of DP
- ☐ Data Base Administrator
- ☐ Executive VP or Other Corp. Officer
- ☐ Department head (Name of Dept. \_\_\_\_\_)
- ☐ Applications Mgr.
- ☐ User(s) of the application
- ☐ Other (specify) \_\_\_\_\_

5. How would you evaluate your DBMS in terms of:

- a. Strengths: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b. Weaknesses: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Please rate your level of satisfaction with your DBMS in terms of:  
(5 highly satisfied, 1 dissatisfied)

- a. Technical capabilities \_\_\_\_\_  
(Does it perform as specified)
- b. Documentation \_\_\_\_\_
- c. Ease of use for \_\_\_\_\_  
Programmers \_\_\_\_\_  
Non-technical staff \_\_\_\_\_
- d. Vendor technical support \_\_\_\_\_
- e. Vendor response to user \_\_\_\_\_  
suggestions for improvements
- f. Cost \_\_\_\_\_

7. Please rate the importance of the following DBMS features  
(Scale: 5 highly important, 1 least important).

FEATURE	RATING	CHECK 3 or 4 MOST CRITICAL COMPONENTS
a. Data Dictionary		
b. Report Writer		
c. Query Language		
d. Data Manipulation Language		
e. Communications Interface		
f. Interfaces to other DBMS files (specify _____)		
g. Host Language Interface (specify _____)		
h. Other Features (specify) _____ _____		

8. What improvements do you think should be made to:

a. RCS DBMS products: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b. In-house DBMS products (if known): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9. What is the percentage of total use of your DBMS?

\_\_\_\_\_ % Used by technical staff  
(EDP Dept. Personnel)

\_\_\_\_\_ % Used by non-technical staff

100 %

10. Do you expect this percentage of DBMS use to change in the next 5 years?

☐ Yes ☐ No

How/Why? \_\_\_\_\_  
\_\_\_\_\_

11. Of the following technical requirements which ones do you require in a DBMS product?

a. Procedural compilation capability

☐ Yes ☐ No

b. Multiple concurrent updates

☐ Yes ☐ No

c. Variable length file support

☐ Yes      ☐ No

d. Minimum file size DBMS should support: \_\_\_\_\_

e. Other technical requirements: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

12. How much technical support from your vendor did you need during the first year your DBMS was installed versus your current requirements?

TECHNICAL SUPPORT	1st YEAR	CURRENT
Hours		
Per Week		
Per Month		
Performed		
On-Site		
Telephone		
Both		
Other Support Required		
_____		
_____		
_____		
_____		



13. What is the average training requirements of your DBMS product?

\_\_\_\_\_ Number of class days required for programmers

\_\_\_\_\_ Number of months before programmer is proficient  
in using the DBMS

\_\_\_\_\_ Number of training days required for users (learn  
enough to get meaningful results)

14. Do you know how much is being spent for DBMS usage on the RCS  
network?

☐ Yes ☐ No

a. If yes, average montly DBMS expenditure \$ \_\_\_\_\_

b. Average monthly expenditure for all RCS services:

\$ \_\_\_\_\_

15. Under what conditions would you consider bringing a DBMS  
product in-house as opposed to using it on a time-sharing service?

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16. What expenditure level would make this cost effective for you  
to do?

\$ \_\_\_\_\_ (monthly/annual)

17. Who would be involved in the final decision to go in-house?

☐ EDP Manager, Director of MIS, VP of DP

☐ Data Base Administrator

☐ Executive VP or other corporate officer

- ☐ Department head
- ☐ Applications Manager
- ☐ User(s) of the application
- ☐ Other (specify) \_\_\_\_\_

18. If you were to buy a DBMS product to bring in-house, how would you prefer to pay for it?

- ☐ Purchase
- ☐ Lease
- ☐ Rent

Why? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

19. How would you prefer to pay for maintenance?

- ☐ Fixed annual fee
- ☐ Percent of the cost of the total package
- ☐ As needed
- ☐ Included in lease

20. If you were going to buy a DBMS product for in-house use, what do you think would be involved in the buying cycle?

- a. Number of visits made by the salesman (try to obtain approximate number) \_\_\_\_\_
- b. Number of weeks/months from when the decision was made to start evaluating products until the time of selection  
\_\_\_\_\_ (weeks/months)

c. Number of weeks from the time the product was installed until the product was formally accepted \_\_\_\_\_

d. Would you require that the vendor

1) Install the DBMS package on your own computer to test?

☐ Yes

☐ No

2) Require that the vendor provide you with bench marks?

☐ Yes

☐ No

3) Conduct your own bench marks?

☐ Yes

☐ No

4) Technical staff would only review system documentation.

☐ Yes

☐ No

e. Would you also require that the DBMS vendor give a presentation of the capabilities of the product to members of the EDP Dept. or upper management as part of the selection process?

☐ EDP Department personnel

☐ Upper Management

☐ Both

21. What do you think are the most important attributes of a software salesman?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

22. Please rate the importance of the following factors when selecting a software product:  
(Scale: 5 high, 1 low)

FACTOR	RATING	RATING of '5's'
a. Technical Capabilities of Product		
b. Vendor Size		
c. Vendor Support		
d. Vendor Location		
e. Vendor Reputation		
f. Number of other Installations		
g. Maintenance/Upgrading of the Product		
h. Price		
i. Established User Group		
j. References from Other Users		
k. Other_____		

23. Do you know your RCS salesman?

☐ Yes ☐ No

- a. If yes, do you think the RCS salesman is capable of selling you an DBMS software package for in-house?

☐ Yes ☐ No

Why?\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- b. If you do not know the RCS salesman, what is your general opinion of the quality/image of the RCS salesman versus a DBMS salesman?

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24. Do you think the RCS's DBMS product could be sold as a product for in-house use?

☐ Yes      ☐ No

Why? \_\_\_\_\_

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25. Are you aware of any limitations of the RCS product which would not make it competitive with other DBMS products like IMS, ADABAS, System 2000 for in-house use?

☐ Yes      ☐ No

Why? \_\_\_\_\_

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26. Would you buy a DBMS product from an RCS vendor to bring in-house?

☐ Yes      ☐ No

Why? \_\_\_\_\_

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27. Have you ever been approached by a plug compatible mainframe vendor?

☐ Yes

☐ No

28. Have you purchased or leased a PCM?

☐ Yes

☐ No

29. Do you think the availability of a DBMS product on the PCM would make the PCM more attractive to buyers?

☐ Yes

☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## POTENTIAL DBMS USERS

1. Name(s) of DBMS products you are currently evaluating:

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2. Is your EDP Department or any other department in your company using a DBMS on a remote computing service?

☐ Yes ☐ No

a. If yes, name of RCS vendor: \_\_\_\_\_

Name of DBMS: \_\_\_\_\_

Year DBMS service began: \_\_\_\_\_

b. Once you bring a DBMS product in-house, do you plan to terminate the RCS DBMS service?

☐ Yes ☐ No

Why? \_\_\_\_\_

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3. Indicate how you are selecting your DBMS product.

☐ a. Evaluated several products on the market. List names:

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☐ b. Went to one vendor. Why? \_\_\_\_\_

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☐ c. Issued an RFP.

☐ d. Other: \_\_\_\_\_

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4. Who will be involved in the final decision on selection? (Check all that apply)

- ☐ a. EDP Manager, Director of MIS, VP of DP
  - ☐ b. Data base administrator
  - ☐ c. Other Executive VP or Corporate Director
  - ☐ d. Technical Evaluation Committee
  - ☐ e. Users
  - ☐ f. Other (specify) \_\_\_\_\_
- 

5. What is involved in the buying cycle for the DBMS?

a. Number of visits made by the salesman (try to obtain approximates)  
\_\_\_\_\_

b. Number of weeks/months from when the decision is made to start evaluating products until the time of selection.  
\_\_\_\_\_

c. Number of weeks from the time the DBMS is installed until the product was formally accepted.  
\_\_\_\_\_

d. Are you also requiring the DBMS vendors to give a presentation of the capabilities of the product to members of the EDP department or your management as part of the selection process?

- ☐ EDP Department Personnel      ☐ Upper Management
- ☐ Both

6. During the technical evaluation cycle, are you planning to:

a. Install the DBMS package on your own computer to test?

- ☐ Yes      ☐ No

b. Require that the vendor provide you with benchmarks?

- ☐ Yes      ☐ No

c. Conduct your own benchmarks?

☐ Yes ☐ No

d. Review system documentation only.

☐ Yes ☐ No

e. Other (Specify) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7. How would you evaluate DBMS products on the market in terms of:

Strengths: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Weaknesses: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

9. Please rate the importance of the following DBMS features.  
(Scale: 5 = highly important, 1 = least important)

FEATURE	RATING	CHECK 3 or 4 MOST CRITICAL COMPONENTS
a. Data Dictionary		
b. Report Writer		
c. Query Language		
d. Data Manipulation Language		
e. Communications Interface		
f. Interfaces to Other DBMS Files (Specify_____)		
g. Host Language Interface (Specify_____)		
h. Other Features (Specify_____)		

10. What improvements do you think should be made to:

- a. In-house DBMS products? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- b. RCS DBMS products (if known)? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



11. Of the following technical requirements, which ones do you require in a DBMS product?

a. Procedural compilation capabilities:

☐ Yes ☐ No

b. Multiple concurrent updates:

☐ Yes ☐ No

c. Variable length file support:

☐ Yes ☐ No.

d. Minimum file size DBMS should support: \_\_\_\_\_

e. Other technical requirements: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

12. What percentage of total use of your DBMS do you anticipate:

\_\_\_\_\_ % Used by technical staff (EDP Department Personnel).

\_\_\_\_\_ % Used by non-technical staff.

13. Would you expect this percentage of DBMS use to change in the next 5 years?

☐ Yes ☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

14. How do you prefer to pay for your DBMS?

☐ a. Purchased

☐ b. Leased

☐ c. Rent

15. Is (purchase, lease, rent) the preferred method of payment for software products in your company?

☐ Yes

☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

17. How would you prefer to pay for maintenance?

☐ a. As a fixed annual fee

☐ b. As a percent of the cost of the total package

☐ c. As needed

☐ d. Included in lease

18. How much technical support from your vendor do you anticipate needing during the first year your DBMS is installed versus your requirements thereafter?

TECHNICAL SUPPORT	FIRST YEAR	THEREAFTER
Hours		
• Per Week		
• Per Month		
Performed		
• On-site		
• Telephone		
• Both		
Other Support Required:		
_____		
_____		
_____		
_____		

19. What do you anticipate will be the average training requirements for your DBMS product?

- \_\_\_\_\_ Number of class days required for programmers
- \_\_\_\_\_ Number of months before programmer is proficient in using the DBMS.
- \_\_\_\_\_ Number of training days required for users (learn enough to get meaningful results.

20. Does your company also use RCS Services?

☐ Yes ☐ No

a. If yes, do you know the RCS salesman? ☐ Yes ☐ No

1) If yes, do you think the RCS salesman is capable of selling you a DBMS?

☐ Yes ☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b. If no, what is your general opinion of the quality/image of RCS salesman versus a DBMS salesman?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

21. What do you think are the most important attributes of a software salesman?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

22. Please rate the importance of the following factors when selecting a software product (Scale: 5 = high, 1 = low)

FACTOR	RATING	RATING OF '5's'
a. Technical Capabilities of Product		
b. Vendor Size		
c. Vendor Support		
d. Vendor Location		
e. Vendor Reputation		
f. Number of Other Installations		
g. Maintenance/Upgrading of the Products		
h. Price		
i. Established User Group		
j. References from Other Users		
k. Other _____		

23. Would you consider purchasing more than one DBMS product?

☐ Yes

☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- a. If yes, would this:

☐ Replace your current DBMS

☐ In addition to your current DBMS

24. Would you consider or have you considered purchasing a DBMS product developed by an RCS vendor?

☐ Yes ☐ No

Why \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

25. Are you aware of any limitations of RCS developed DBMS products which would not make them competitive with other products like IMS, ADABAS, System 2000, etc. for in-house use?

☐ Yes ☐ No

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

26. Have you ever been approached by a plug compatible mainframe vendor?

☐ Yes ☐ No

27. Have you purchased or leased a PCM? ☐ Yes ☐ No

28. Do you think the availability of a DBMS product on the PCM would make the PCM more attractive to buyers?

☐ Yes ☐ No

Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





